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THE UNIVERSITY OF ALBERTA

SMALL GROUP BEHAVIOUR OF EDUCABLE MENTALLY RETARDED BOYS

by

©

MAXFIELD JEFFRY HUGHES

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

EDMONTON, ALBERTA

FALL 1974

THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled Small Group Behaviour of Educable Mentally Retarded Boys submitted by Maxfield Jeffry Hughes in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

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ABSTRACT

The present study was designed to investigate the small group behaviour of a group of boys classified as educable mentally retarded. Twelve boys classified as educable mentally retarded (EMR), and twelve boys from regular classes (Regular), aged 13-15 years, were randomly allocated to three groups. Group 1 consisted of all Regular boys, Group 2 consisted of all EMR boys, and Group 3 was comprised of four EMR boys and four Regular boys.

The major instrument used to evaluate small group behaviour was the Bales Interaction Process Analysis. The interaction was rated for each group during six problem solving discussion sessions conducted at an outdoor education center over a five day period. Measurements of productive thinking, syntactic maturity, sociometric status, behaviour, self-esteem, psychomotor performance, and adaptation to camp environment were also made.

The environment created at the camp emphasised a non-directive style of leadership, an oral approach to instruction and decision making by the participants.

A series of hypotheses predicted that the groups would differ in their ability to function effectively in small group problem solving situations, and that this ability would be related to sociometric status, self-esteem, behaviour ratings, and psychomotor performance. The only hypotheses supported were those predicting a negative correlation between maladaptive behaviour and the ability to function effectively in small

group problem solving situations. The value of these results is limited by the fact that the three groups may not have differed from each other, principally because the EMR boys in the study may not have been a representative sample of the EMR population. The groups did demonstrate relatively immature problem solving techniques and relatively high maladaptive behaviour scores. However, it is possible that these results may have been influenced by the novelty of the small group problem solving situation. Even allowing for the effects of the novelty of the situation, there appeared to be a need of assistance for the EMR to improve their interpersonal behaviour.

The value of the small group as an instructional technique for the education of the EMR is not resolved by this study. Although the results are encouraging, further research is required to clarify the question.

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CHAPTER 1

THE PROBLEM

BACKGROUND TO THE STUDY

The traditional approach to education tended to place the child in a passive role in the educational process. But the application of classroom educational practices which emphasize student participation have been advocated quite extensively in recent literature (Johnson & Bany, 1970; Schmuck & Schmuck, 1971). This change in emphasis has been frequently identified as a distinction between a "child-centered" and a "teacher-centered" approach to education. The traditional approach emphasized the communication of objective knowledge, and the development of academic skills. The child-centered approach to learning places less emphasis on teacher instruction and the acquisition of specific information by students. Knowledge remains important, but its role has changed. The different emphasis on the role of knowledge, between a teacher-centered approach and a child-centered approach to education, may be related to what Biggs (1972) terms "content learning" and "process learning". Content learning relates to the subject matter, and process learning relates to what happens as a result of learning experiences. Biggs (1972) wrote:

> Process learning may involve a learning experience that changes the learner's whole way of looking at things, such as a change in his self-concept. Content is involved, but not for its own sake, the intent in process learning is to change the learner so that he is more able to cope effectively and autonomously with novel situations (p. 2).

McLeish, Matheson and Park (1973) expressed their opinions regarding a need for a change in educational practice by calling for a "Copernican revolution" in the classroom, involving both teachers and students. They advocated a program, which was problem oriented rather than solution oriented, which was tolerant of error, which was marked by non-directive and non-authoritarian teaching, which enabled the student to work at his own pace and pursue his own interests, and in which, to a large measure, the student was responsible for his own learning, but in which he discovered that freedom is inseparable from responsibility. The program outlined by McLeish, Matheson and Park (1973) would appear to lay emphasis far more on what Biggs (1972) called process learning rather than on content learning. The changes advocated appear to have important implications for the role of the teacher. As stated in the Report of the Commission on Educational Planning (Worth Report, 1972):

> The concept of the teacher holding forth at the front of the classroom has been dead for some time. The idea of a teacher who conveys information and answers is now dying. Technology is beginning to perform this data function quite admirably. Teachers are beginning to realize that their main job begins after the learner has processed the information (p. 197).

One educational approach that appears to offer the type of educational environment suggested by those advocating a child-centered approach is the small group. The small group is by no means a new educational approach. Research into the productivity of the small group goes back into the nineteenth century. But recently, a revival of interest in the small group has occurred as a result of its application to the field of human relations training.

Hare (1962) and Kinnick (1972) differentiated between groups that are task oriented, such as those involved in the solution of publicly stated problems, and groups that focus on affective issues, such as self-awareness or inter-personal relations.

Bales (1950) did not distinguish between task oriented and socio-emotionally oriented groups. Rather, he saw the two areas as being interrelated in such a way that all group members face simultaneous problems in the task and socio-emotional areas. Effective functioning in the group depends upon the successful resolution of both types of problems. If this is so, the value of the small group as an instructional technique would depend upon the ability of group members to cope successfully with the task problems, and the socio-emotional problems of small group functioning.

The educable mentally retarded have frequently been reported as neglected at home, isolated in the regular classroom, rejected in the community (Telford & Sawrey, 1967) and failing in the work situation (Peckham, 1951). The cause of these problems has frequently been identified as poor socio-emotional adjustment, although the problem of separating cause from effect in these cases is generally recognized as difficult. In view of the reported difficulty in socio-emotional adjustment of the educable mentally retarded, an investigation of their ability to cope with the socio-emotional problems of small group functioning would appear warranted, if this learning approach is to be recommended for them.

Two other aspects of the behaviour of the educable mentally retarded are also relevant to the issue of the value of the small

group. The educable mentally retarded are frequently reported in the literature as retarded in language development, and unable to engage in divergent type thinking. However, Durrell (1958) noted that the language of retarded children is least retarded in the oral communication channel, and several authors (Rouse, 1965; Tisdall, 1962) found that, given favourable circumstances, the retarded are capable of a form of divergent thinking, namely, productive thinking.

Productive thinking has been defined in various ways, but in general, the definitions refer to the ability to generate new or relevant ideas. The traditional classroom tends to emphasize the acquisition of factual information, and gives little scope for generating new ideas. Both Rouse (1965) and Tisdall (1962) emphasize the importance of providing an environment in which the opportunity is given for children to participate in exercises designed to cultivate productive thinking, if this skill is to be developed.

The reports of the relative superiority of oral communication for the educable mentally retarded, and the possibility that their potential to engage in productive thinking is not utilized, suggests that the small group approach to instruction may be of benefit to the retarded, since the environment of the small group appears to be one which provides the opportunity for oral communication and productive thinking. Because of this, the small group may provide an educational environment offering an opportunity to improve the academic performance and socio-emotional adjustment of the educable mentally retarded. The less directive role advocated for the teacher would also appear to lend itself well to a small group approach to instruction. However, the

value of the small group as an educational approach for the educable mentally retarded has not as yet been demonstrated.

STATEMENT OF THE PROBLEM

The small group has been acclaimed as a successful approach to instruction and learning, but its value for the educable mentally retarded has not been thoroughly investigated.

The problem, therefore, is to determine whether the educable mentally retarded can function effectively in small group problem solving situations. The present study was designed to examine how educable mentally retarded boys functioned in specially structured small groups. The groups were engaged in a variety of problem solving discussions which were held in an environment removed from the traditional classroom setting.

PURPOSE OF THE STUDY

Behaviour in small groups has been related by Bales (1950) to two major problems: a) task related problems, and b) socio-emotional related problems. The major focus of the present study was to investigate the ability of the educable mentally retarded to cope with the task and socio-emotional problems of small group functioning.

A second purpose of the study was to examine how the educable mentally retarded responded in problem solving discussion sessions, as a result of different types of learning experiences upon which the discussions were based. It was anticipated that measurements of the interaction occurring in groups would indicate if one type of learning

experience was more advantageous for them than another.

A third purpose of the study was to investigate the relationship between language development and small group behaviour. It was anticipated that those with more mature language development would operate more effectively in small group problem solving situations than those with less mature language development.

The questions of inappropriate behaviour, social status, self-esteem, and to a lesser extent, psychomotor performance, have been linked with the academic achievement of the educable mentally retarded (Ellis, 1963). A fourth purpose of the study was to investigate the relationship between these factors, and the ability to function effectively in the small group. Such information would be useful in determining if the value of small groups is limited by certain behavioural characteristics of the educable mentally retarded.

The small group may provide an educational environment offering an opportunity for improved learning experiences for the educable mentally retarded, but the issue does not appear to have been investigated to any great extent.

GENERAL RESEARCH QUESTIONS

The present investigation was an attempt to explore the following basic questions which seem important in understanding the behaviour of the educable mentally retarded in small group problem solving situations:

1.0 How do groups of varying composition compare on measures related to the ability to function effectively in small group problem solving situations?

2.0 Does the language maturity of an individual affect his ability to function effectively in small group problem solving situations?

3.0 Does the level of socio-emotional adjustment of the individual affect his ability to function effectively in small group problem solving situations?

4.0 Are adaptive behaviour, self-esteem, social status and psychomotor performance, as defined in this study, related to the ability to function effectively in small group problem solving situations?

These general research questions led to the formulation of a series of specific hypotheses. These hypotheses are presented in detail in Chapter 3, following a description of instruments and procedures selected to test the specific hypotheses.

SIGNIFICANCE OF THE STUDY

The high percentage of children of school age identified as educable mentally retarded is of educational and social concern. No effort should be spared to identify a learning environment which will provide improved opportunities for the development of these children. The application of the small group approach to education, as it was applied in this study, was an attempt to evaluate the potential of the small group approach to learning as an instructional technique for the educable mentally retarded.

The question of the integration or segregation for educational purposes of the educable mentally retarded remains a contentious issue.

The present study was not intended as a comprehensive investigation of this issue. However, it did investigate, in a limited way, the effect of integration or segregation in the small group setting.

The ability of the educable mentally retarded to engage in divergent thinking is in dispute. It has been claimed that lack of opportunity to engage in this style of thinking is partly to blame for demonstrated weakness in this ability. The present project was designed to encourage these abilities and to add useful data to the issue. Similarly, it was anticipated that a measure of syntactic maturity would be of value in determining if syntactic maturity was related to the ability of the educable mentally retarded to function effectively in small group interaction.

DEFINITION OF TERMS

For the purpose of the present study the major terms used are defined as follows:

Small group. The small group is defined as:

> Any number of persons engaged in interaction with each other in a single face-to-face meeting or a series of such meetings, in which each member receives some impression or perception of each other member distinct enough so that he can, either at the time or in later questioning, give some reaction to each of the others as an individual person, even though it be only to recall that the other was present (Bales, 1950, p. 33).

Educable mentally retarded. The educable mentally retarded (EMR) child is defined as:

> A child who, because of subnormal mental development, is unable to profit sufficiently from the program of the regular elementary school, but who is considered to have potentialities for development in three areas: (a) educability in academic subjects of the school at a minimum level, (b) educability

> in social adjustment to a point where he can get along independently in the community, and (c) minimal occupational adequacies to such a degree that he can later support himself partially or totally at the adult level (Kirk, 1972, p. 164).

Productive thinking. Productive thinking is defined as the origination or elaboration of ideas, relevant to the topic under discussion, as recorded by two observers trained to identify these two behaviours.

Syntactic maturity. Syntactic maturity refers to the level of complexity of an individual's spoken language, as measured by T-units in a solicited speech sample.

T-units. T-units are defined as ". . .'minimal terminable units', since they would be minimal as to length, and each would be grammatically capable of being terminated with a capital letter and a period (Hunt, 1965 , p. 21)".

Self-esteem. Self-esteem is defined as the evaluation which the individual makes and customarily maintains with regard to himself. It expresses an attitude of approval or disapproval and indicates the extent to which the individual believes himself capable, significant, successful and worthy as measured by Coopersmith's Self-Esteem Inventory (1967).

Adaptive behaviour. Adaptive behaviour is defined in two ways:

1. the ability to adapt to the particular demands of the learning environment as rated globally by the investigator's assistants, and termed, adaptation to the camp environment, and
2. the reactions to new situations, reactions to criticism, self-deprecation, and hesitation to express opinions publicly

as measured by Coopersmith's Behaviour Rating Form (1967).

Social status. Social status is defined as the degree to which an individual is sought after by his peers as a partner in work situations as measured by a sociogram (Moreno, 1934).

Additional terms. A number of terms are used in the study that are very specific to the measurement instruments from which they are derived. The definitions of these terms are given in the section dealing with measurement instruments contained in Chapter 3.

LIMITATIONS OF THE STUDY

The present study was limited by the following factors:

1. The boys selected in this project may not have been truly representative samples of EMR and Regular class children aged 13 - 15 years.,
2. the duration of the project may not have been sufficiently long to allow for a complete adjustment to the small group approach to instruction used, or for an adequate sampling of interaction occurring in the small group problem solving sessions, and
3. although every effort was made to control the external factors of the learning environment, it was not practicable to ensure that each group received identical "treatments" in this regard. The rigorous controls used in laboratory type experiments were not used in this study. Every effort was made to maintain a natural and non-threatening atmosphere which

was thought necessary if the EMR boys were to interact spontaneously.

OVERVIEW OF THE STUDY

Chapter 1 presents the background to the study and the statement of the problem to be investigated. The chapter continues by describing the purpose of the study, the major research questions to be investigated, and the expected significance of the study. The chapter concludes by identifying the limitations of the study, and with definitions of the major terms used.

The second chapter reviews the literature related to the questions investigated in the study. In particular, literature on the small group and its role in education, the cognitive ability of the retarded, and the language ability of the retarded are reviewed.

Chapter 3 contains the description of the selection and grouping of subjects, the specific hypotheses, the measurement instruments used in the study, the personnel associated with the project and the procedures used for collecting and analyzing the data.

The fourth chapter reports the results of the analysis of data. Chapter 5 contains a summary of the study, a discussion of the findings of the study, and concludes with a statement as to the implications of the findings and suggestions for further research.

CHAPTER 2

RELATED LITERATURE

SMALL GROUP RESEARCH

Golembiewski (1962) suggested that the small group concept has emerged as an object of study as a natural outgrowth of man's interest in social organization. He presented a challenging argument that the group rather than the individual or "society" is the most relevant unit in social activity.

Hare (1962) suggested that the "small" in small group, refers to the opportunity for face to face interaction regardless of how many individuals comprise the group. The distinction is important for it places the emphasis on the interpersonal relationships rather than on a numerical value.

The process by which a collection of individuals becomes a group is explained by Hare (1962), as relating to, a) the evolution of a set of goals and norms, b) the development of a role system, and c) the establishment of a network of affective ties.

The essential element which appears to establish a collection of individuals as a group is that of interaction. Research into the functioning of small groups has depended to a great extent on the use of interaction analysis. The purpose of using an interaction analysis system is to reduce the degree of subjectivity involved in observation. The various interaction analysis formats available differ, as a result of the purpose for which they were constructed, and as a result of the authors philosophical bias.

The interaction analysis used in the present study was the Bales Interaction Process Analysis (IPA) (1950). The instrument is discussed in detail in Chapter 3. The format of the IPA was developed as a result of Bales' conception of the way small groups function during problem solving discussions.

The problem solving sequence can be conceived as attempts by the group members to cope with problems relating to the task at hand, and problems relating to socio-emotional relations among group members. In a general way, the problem solving sequence occurs in three stages, beginning with questions, followed by attempted answers, and concluding with either positive or negative reactions to the attempted answers.

More specifically, the sequence of events suggested by Bales (1950) is that the group faces problems related to the following operations:

1. orientation to the task,
2. evaluation of the task,
3. possible solutions of the task, and
4. group members exercising control over other members in suggesting possible solutions.

Concurrent with these problems are the positive and negative socio-emotional reactions occurring in the group. As a result of efforts to resolve the task problems, tensions are created in the social relationships of group members, which may give rise to an increase in negative reactions. As these efforts are successful, the tensions are reduced and a rise in positive reactions among group members may occur.

Bales (1950) provided a scheme for the measurement of the degree to which these problems occur during discussion sessions. The procedures involved the calculation of indices based on the scores on the Interaction Process Analysis. The details are contained in Chapter 3.

The Bales' theory of group functioning relates to the ability of group members to function effectively in the task area, and in the socio-emotional area of group problem solving. In view of the frequently reported difficulties experienced by the EMR in both problem solving and socio-emotional adjustment, the Bales Interaction Process Analysis appeared to have promise as an instrument suitable for the evaluation of the small group behaviour of the educable mentally retarded. No studies were found, however, which applied the Bales Interaction Process Analysis to the question of the small group behaviour of the retarded.

The only study that appears relevant to the present investigation was reported by Bales (1950). The report gave an analysis of the interaction of a group of Grade IX boys involved in a problem solving discussion. Also reported were the analyses of interaction of a younger group and an adult group. All groups were presumably of normal intelligence. The level of task-related interaction and socio-emotional related interaction for Grade IX boys lay between that of the younger and older samples. On the basis of this finding, Bales suggested a progression with increase in age, in the ability of subjects to spend more time on task related interaction, and less time on socio-emotional related interaction. The use of Bales Interaction

Process Analysis appeared to offer an opportunity to investigate the behaviour of the educable mentally retarded in small groups, in an effort to determine if the immature behaviour so frequently attributed to them could be verified by interaction analysis.

GROUP PROCESSES IN THE CLASSROOM

Group processes operating in the classroom have been extensively researched (Bany & Johnson, 1964; Bradford, 1960; Johnson & Bany, 1970; Schmuck & Schmuck, 1971). Their use as an aid to learning academic skills has been thoroughly reported by Delmonaco (1970). But the advantages of group instructional techniques may be more related to the field of socio-emotional development. Gray (1949) wrote:

> Experience shows very clearly that pupil development cannot always be achieved most effectively as the child works alone. Of great importance is the stimulus and added insight which results when he works co-operatively with others in achieving common goals (p. 23).

Flanders (1960) has suggested that the use of groups is only of value for certain types of functions such as planning and evaluation. Blau and Scott (1963) reported that where groups were superior as a method of instruction the superiority was because:

1. social interaction provides an error correcting mechanism,
2. social interaction furnishes social support to individual members, and
3. social interaction fosters competition for respect.

However, they also suggested that this superiority may only hold true for undifferentiated groups, that is groups such as peer groups where

no organizational status differentiates group members.

Burr, Harding and Jacobs (1950) also emphasized the role of social interaction as an important factor in the use of small groups:

> Through group work children not only get important work done, they also learn the meaning of shared roles of leadership, the responsibility inherent in freedom, the necessity of critical thinking in the solution of problems and the need for continuous evaluation, both of the products of group action and of the processes employed (p. 253).

Schmuck and Schmuck (1971) attached great importance to the informal relationships developed in the classroom because of the influence these relationships have on the students' academic learning and socio-emotional development.

Heathers (1965) suggested that grouping practices used in schools varied as a result of varying conceptions of school goals and the function of education.

Bany and Johnson (1964) asserted that the almost universal educational practice of grouping according to achievement seriously affects a child's attitudes towards himself, towards others, towards learning and towards school. They stated their philosophical bias regarding the purpose of education in the following terms:

> Since some of the most urgent problems of our society involve human relations, delinquency and mental health, the time may come when we must decide whether we are paying too high a price for academic learning. The classroom experience determines to a large degree how children relate to others and how they regard themselves (p. 92).

The value of small groups as an instructional technique seems well established. The major focus of its use for instructional purposes in the future is less clear. There is evidence to support its value both as an aid to instruction in formal academic subjects,

and in the newer aspects of socio-emotional development. In both these aspects the retarded are frequently reported as in need of assistance. If the value of this approach for the educable mentally retarded could be established, the application of the technique in a more widespread and systematic manner would improve the quality of education for the educable mentally retarded in two important aspects of development.

A SPECIAL CASE OF GROUPING--THE SEGREGATION-INTEGRATION ISSUE

Special classes for the education of the mentally retarded have been established in a commendable effort on the part of school administrators to improve the educational opportunities of the retarded child. It has become all too apparent that regular classrooms, as they exist, and the teachers in charge of them, are ill-equipped to handle the many problems presented by the presence in the class of mentally retarded children. Originally, it was anticipated that by segregating these children into a special class, their educational problems could be more adequately handled. Regular classes, too, were expected to benefit, since the teacher would be no longer required to spend a disproportionate amount of time with the slowest group (Guskin & Spicker, 1968).

But the results of early studies on the efficacy of special class placement were anything but encouraging to those who had anticipated that the procedure would improve the educational opportunities of the retarded. In most reports it was suggested that the academic achievement of children in special classes was poorer than that of mentally retarded children remaining in regular classes. In contrast

their social adjustment was frequently found to be better (Stevens & Heber, 1964).

More recent evaluation of these studies, however, suggests that the conclusions reached regarding academic achievement may not be valid. Several reports (Kirk, 1962; Quay, 1963; Guskin & Spicker, 1968) have pointed out that many of these studies reveal serious methodological weaknesses, in particular, sample bias and inadequate control groups.

Nevertheless, Quay (1963) concluded her review of the literature by stating, "Not a single study has demonstrated that special-class placement is more effective than regular class placement when the criterion of effectiveness is achievement (p. 672)." But academic achievement is only one dimension of the problem. As Stanton and Cassidy (1964) emphasized, effectiveness must ultimately be answered by the question of, "Effectiveness for what purpose?"

The notion of effectiveness is inextricably bound up with questions of age, sex, area of residence, type of work available and educational opportunities. Psychological criteria are of relevance only insofar as they reflect the competence of the individual to cope with the expectations of the society in which he lives. Thus a second, but by no means less important aspect of the efficacy studies is the question of the effect of placement on social adjustment. It appears that although special placement arrangements may provide those in need of special help with this opportunity, these arrangements frequently identify the individual as inferior to his peers. As a result, his self-esteem may suffer to such an extent that the benefits that might

have accrued from the special placement are diminished. If the arrangements also involve segregation from peers for any length of time the result may be to hamper his ability to function effectively in a community setting.

Baldwin (1958) and Johnson (1950) have reported studies which investigated the social status of mentally handicapped children. Each study found that the retarded tended to be isolated and rejected by normal children. Blatt (1958) compared the status of the mentally retarded in special classes with that of the mentally retarded in regular classes. He reported that those in regular classes appeared more emotionally stable and more socially mature than those in special classes. Blatt concluded that the retarded must be given the opportunity to participate with normal children in appropriate school activities if they are to develop appropriate social and emotional responses.

The literature on the social and vocational adjustment of the retarded supports the views expressed regarding adjustment problems in the classroom. The literature on vocational adjustment of the retarded consistently identifies poor social adjustment as a cause of failure in the work setting. Peckham (1951) identified lack of acceptance of the retarded by non-retarded fellow workers as the single most important reason for failure on the job. Appell, Williams and Fishell (1962), Stern and Spiegal (1970) and Young (1958) all reported inadequate social behaviour such as lack of punctuality, general disregard for rules, unrealistic expectations and poor interpersonal relations as causes of failure. Dinger (1961) found that 70% of his

sample of working retardates did not belong to any socializing club, and suggested that those who did not integrate into the community were in danger of failing in their work situation. Barbee, Berry and Micek (1969) claimed that focussing solely on vocational training may only foster dependence. They recommended specific programs aimed at teaching socialization skills to aid in vocational and community adjustment.

The present investigator suggests that the whole question of efficacy of special class placement has not been resolved, because key variables affecting the issue have not as yet been investigated sufficiently. Among these variables are the nature of the learning task, the composition of the group and the learning environment. Studies which simply compare two classroom groups are not likely to add any significant new data to the mass of information already accumulated on the question. There is a greater need for studies that investigate the conditions under which certain categories and groupings of children (such as the educable mentally retarded) achieve optimum success. From this point of view, perhaps neither the special classes nor the regular classes, as they operate at present, are best suited to the needs of the educable mentally retarded. It would seem advantageous to explore alternative methods of grouping the educable mentally retarded for learning and instruction in environments differing from those in regular and special classrooms. Such explorations might provide additional useful information on the integration-segregation issue.

An investigation into the small group behaviour of the educable

mentally retarded should take into consideration performance in groups of varying composition. By arranging a group composed entirely of EMR boys, and another group composed of both EMR boys and non-retarded boys, information might be gained which could be used for comparison purposes. The inclusion of a third group composed of non-retarded boys only would enable an even more effective comparison to be made. The behaviour of the non-retarded group could be used as a standard against which the behaviours of the other groups could be compared.

COGNITIVE ABILITIES

In 1948 Goldstein described the retarded as incapable of logical thought and unable to make generalizations, or work with abstractions. Such opinions have been important in determining the nature of the education provided for the retarded. Where special provisions were made, these frequently took the form of a "watered down" regular curriculum, or one stressing handicrafts. Where no special provisions were made, the expectations for the progress of the retarded were minimal. Blatt (1971) was of the opinion that such programs were a contributing cause of mental retardation. Recent reviews of the abilities of the retarded (Kirk, 1972; Cruickshank, 1971) were not so pessimistic as was the review of Goldstein (1948). However, learning theory research has consistently reported the retarded as exhibiting "rigidity" in intellectual functioning. Kounin (1948) reported on experiments which indicated that normal children had a greater facility to transfer their response to obtain rewards than did retardates. Plenderleith (1956) demonstrated such deficiencies

did not hold true in certain discrimination tasks where reversals were required by subjects. This phenomenon was extensively investigated by Shepp and Turrisi (1966) who explained it in terms of intradimensional shifts and extradimensional shifts. Stevenson and Zigler (1957) concluded that rigidity was a function of the complexity of the problem. From a series of studies, Zigler (1966) argued that rigidity was a function of social deprivation rather than a factor of cognition. He further suggested that:

> . . . the high incidence of failure experienced by retardates generates a style of problem solving characterized by outer-directedness. That is the retarded child comes to distrust his own solutions to problems and therefore seeks guides to action in the environment (p. 99).

Of importance to the present study was Zigler's contention that the retarded child was not outer-directed simply because of a lower IQ, and his recommendation for greater independence training for the retarded to reduce their reliance on external environmental cues. He concluded by stating:

> The outer-directedness hypothesis suggests that distractibility, rather than being an inherent characteristic of the retarded, actually reflects a style of problem-solving emanating from the particular experiential histories of these children (p. 103).

Lippitt and Gold (1959) reported that the typical reactions of children who fail to learn was one of withdrawal or aggression. The interactions initiated by their subjects in group situations of failure were either passive - hostile or aggressive - assertive.

Bovet (1970) and Reiss (1967) advocated the application of Piaget's theory of cognitive development to the education of the retarded. Both criticized education programs for the retarded which

stressed rote learning on the grounds that the material must be understood before it can be effectively remembered. Repeated presentations of the same material could be achieved by presentation of the same material in different contexts rather than using one method of presentation associated with verbal rehearsal. They advocated a program to develop specific cognitive abilities.

Smith (1967) compared the creative ability of retarded and non-retarded children. Although the non-retarded scored higher on verbal items, the groups scored equally well on non-verbal items. He cautioned against assuming that lack of creative abilities was related to intelligence alone and suggested that highly-structured rigid environments may inhibit creative thought.

Rouse (1965) designed a program for EMR children to foster productive thinking abilities. The program ran for six weeks with a daily thirty minute session. Pre- and post-tests were administered using one test of verbal and one test of non-verbal creativity developed by Torrance. The experimental group scored significantly higher than control groups after treatment, but their level of attainment was still well below that of normal children of their own age. The author concluded that the intervention program had aided in fostering productive thinking among the retarded children.

Tisdall (1962) compared EMR children in special classes with EMR children in regular classes on three verbal and three non-verbal tests of creativity. The special class children were given a program using the discovery method to teach inductive reasoning. Post-test results showed no significant differences on non-verbal measures, but

did show significant differences on the verbal measures of verbal fluency, flexibility and originality. Unfortunately no pre-tests were administered, and as a result no firm conclusions on the value of the intervention can be reached.

Delaney (1970) in an investigation of Guilford's (1956) model of the structure of the intellect using EMR subjects, obtained results which led him to conclude that the EMR subjects were capable of divergent thinking. He stated:

> The identification of divergent production abilities in the subnormal children points out that these children cannot be dismissed from consideration in areas of intellectual functioning assumed to be limited to individuals of normal and superior intelligence. It suggests an untapped area of mental functioning in subnormal children (p. 74).

The two contrasting lines of research that have been reviewed above have been juxtaposed because of possible links between previous research which has demonstrated rigidity in the cognitive processes of the retarded and the type of teaching to which they have been subjected. The literature on the subject has produced several references to the fact that programs which do not provide opportunities for creativity and problem solving are unlikely to produce creative thinkers or problem solvers. A requirement for improved cognitive functioning may be to present appropriate tasks and devise appropriate learning environments.

The learning environment of the present study was designed to encourage divergent or productive thinking among the pupils. Measurement of productive thinking abilities was made using an operational definition based upon the ability to originate or to elaborate ideas relevant to the topic under discussion as measured by trained observers.

The instrument is described in detail in Chapter 3.

Bales (1950) suggested that manipulation of the composition of groups, and varying the problem the group faced, would affect the interaction occurring in a small group. Bales (1950) provided several examples of the way in which profiles on the IPA varied as the composition of the group varied. However, he gave no information on the way group interaction varied, as a result of variations of problem solving tasks.

In view of the general poor school achievement level reported for EMR subjects, the present study varied the nature of the tasks to be performed to determine if different types of tasks would affect the small group behaviour of educable mentally retarded boys. If such variation did occur, evaluation of the IPA data would be evidence as to which type of task enabled EMR boys to function more effectively. Because of the impracticability of exercising rigorous experimental control in a study such as the present investigation, precise description of the way the tasks varied is not possible. The tasks certainly differed in terms of their physical requirements, but to what extent these obvious differences affected problem solving was not possible to say. However, some effort was made to choose four tasks which appeared to demand different degrees of intellectual involvement. It was assumed that the nature of the intellectual involvement required would be the essential factor in producing group variations in problem solving ability. Details of the tasks are provided in Appendix A.

LANGUAGE AND COMMUNICATION

The process of problem solving in the group usually requires verbal communication among members. Using Bales' (1950) concepts of group functioning as a basis for discussion, it appears there is an advantage to an individual if he can communicate his ideas effectively, for in so doing he is more likely to influence other members of the group to his point of view.

Very little research on communication in small groups has been carried out on educational sub-groups such as the EMR. However, if the evidence from research into school achievement and social adjustment of the mildly retarded is any criterion, the question of communication, in general, and inter-personal relations, in particular, is of critical importance. The EMR may be "trained" in correct responses, but the appropriate application of these responses in dynamic interaction is the ultimate goal of language programs.

In this regard Spradlin (1967) suggests that the goal of language training of the retardate is to allow him to communicate with other persons. He suggests, therefore, that therapy programs must be based upon the language model of normal individuals communicating in natural situations.

The communication process is defined as language events, both verbal and non-verbal, that are interpersonal. Language is defined as a symbolic code that represents thought--it includes sounds, symbols and grammatical patterns.

The communication process is largely verbal but the non-verbal aspects of communication are only recently attracting attention from

researchers. Schiefelbusch (1963) stated:

> . . . non-speech communication behaviour, such as use of gestures and responses to speech and gestures, very likely play an important role in the communication of mentally retarded children (p. 33).

However, Spradlin (1963) was unable to report one study that investigated the non-verbal communication behaviour of the mentally retarded. The concept of communication occurring by gestures and expressions is central to Zigler's (1961) view of the retarded as being "outer-directed". But by far the most important aspect of the communication process is verbal behaviour.

Language of the retarded has been consistently identified as inferior to that of normal children in both quality and quantity. A direct correlation exists between language ability and level of retardation. (The relationship is hardly a surprise since level of retardation is a function of the IQ score which in turn is heavily influenced by language ability.) In comparison with the language of normal children, specific deficits of the retarded are--restricted vocabulary, delayed speech, shorter sentences, inferior syntax and a greater reliance on the use of nouns (Spradlin, 1963).

Schlanger (1967) identifies nine additional negative characteristics of the retarded which presumably affect language functioning:

1. poor auditory memory,
2. short attention span,
3. linguistic ability deficient as demonstrated by poor grammar and minimal content,
4. perseverance in oral expression,
5. minimal creative or imaginative pursuits,

6. inability to transfer meanings,
7. absence of self-criticism,
8. poor evaluation and organization of perceptual clues, and
9. frustration in communication activities leading to withdrawal and lowered thresholds of frustration.

Many of these characteristics appear to be learned expressive communication behaviour. Such characteristics are of importance in interpersonal situations where the lack of expressive skills hampers the retarded individuals'ability to communicate effectively. Schlanger (1967) continued:

> The inappropriate social responses and self-stimulation (interpersonal and intrapersonal feedback) of the retardate are associated with his limited communicative skills. This linguistic deficiency serves additionally to stigmatize the mentally retarded and to strengthen the concept which typically relates inadequate speech and language use with mental retardation (p. 139).

Valletutti (1971) suggested that speech patterns are of importance in developing social relationships because of the influence speech has upon the judgments made about people based upon their speech:

> Man develops implicit theories of human behaviour in order to rapidly evaluate others. Social intelligence is to a large extent measurable by how well behavioural stereotypes are incorporated into functional judgments of people. Rapid judgments are based on a variety of visual and auditory inputs which include speech . . . (p. 455).

In discussing therapy Schlanger (1967) adopted a language communication model. The virtue of a communication model is that it recognizes the individual as both an initiator and receiver of communications. As a result, attention is paid to the individual as a receiver of communications. In the interpersonal communication process a message received frequently suggests the appropriate response. If

the individual fails to receive the message, or misinterprets the cues, he may respond inappropriately. The therapy program, of course, must ensure that the subject is taught an appropriate repertoire of behavioural responses to common social situations. Schlanger's suggestions may be of value to the EMR, particularly if it is demonstrated that they have difficulty in coping with the social-emotional problems of group behaviour.

Two references were found regarding the language ability of the retarded which appear to be educationally significant and very relevant to the present study. Durrell (1958) reported as his major finding that "Listening comprehension was found to be the best channel for learning (p. 2)." But the superiority of the listening channel is not likely to remain. Differential effects for various age groups are reported with the superiority of the auditory channel decreasing with age, but persisting up to the intermediate grades. Durrell (1958) reported that among primary grade children listening comprehension was consistently higher than would be expected from the mental ages of the children. "In skills of oral communication--listening and speaking--these children appear to be more competent than would be indicated by their mental ages (p. 31)." Drews (1967) reported similar findings. She stated:

> Relative to their other communication abilities, slow learners seemed to be best at talking . . . both reading and writing were well below their oral language development. Thus class discussion seemed to be particularly appropriate mode by which the slow learner could learn and could experience successful and meaningful participation in school (p. 169).

Drews (1967) suggested that more time should be devoted in English classes to the use and interpretation of language, and that teachers must be educated to make effective use of the technique of free discussion.

Drews (1967) attached particular importance to communication behaviour for slow learners. Her comments appear equally relevant to educable mentally retarded subjects. She wrote:

> Communication, . . . is intimately related to other areas of interpersonal relations. Communication behaviours can for this reason play a very prominent role in social acceptance . . . It is generally true that those with an ability to convey feelings and ideas through language are more socially acceptable than those who cannot interact in these ways (p. 174).

Other conclusions were that there was a more positive peer group attitude, a better self concept and more favourable teacher evaluation of pupils in homogeneous classes. Basing her evaluation on Maslow's (1954) hierarchy of needs, Drews (1967) said of the slow learning child in the homogeneous class:

> As he gains increased group acceptance and teacher acceptance and as he finds himself beginning to contribute much more actively in the classroom communication process, his sense of self-worth and competence increases. This in turn frees him more and more to establish lines of communication between himself and the outside world of people and ideas; in short he becomes free to learn (p. 172).

Drews (1967) continued by advocating further studies to investigate communication patterns, especially as they reflect cognitive and personality development. In addition, she recommended studies to compare grouping practices and studies to investigate teaching methods and materials and their relationship to communication. Two of her recommendations are for research to be conducted in the areas of:

1. the characteristics of communication patterns in relation to thought processes. This might be done by between group comparisons . . . or by studying slow learners directly, and
2. the nature of varying instructional materials and the role of the teacher. Do some materials and methods facilitate and others impede the development of the slow learner? Are there other ways of accelerating the development of language skills and concomitant emotional and cognitive development (pp. 174-175)?

It was part of the purpose of the present study to investigate the relationships which Drews (1967) suggested existed, between communication and social status, self-esteem, productive thinking and the nature of the problem solving task. Also, as recommended by Drews (1967), the relationships were investigated during the free discussion, which was encouraged during the small group problem solving sessions.

Spradlin (1963) agreed to the value of studying language in interpersonal settings:

> The study of the language of mentally defective and non-mentally defective persons in a variety of interpersonal settings promises to provide valuable information concerning the language behaviour of the mental defective and the effect of such behaviour on normal persons. Moreover, such studies could point up processes which tend to limit or facilitate language development in mentally defective persons (p. 551).

He continued by speculating on the value of the effect of language training on processes discussed under the labels of thought, abstraction and higher mental processes.

Siegel (1963) investigated the verbal interaction between adult therapists and sub-normal children. The interactions were analysed for complexity and Siegel concluded from these results that the adult unwittingly adjusted the complexity of their language behaviour to coincide with the language ability of the children.

Rosenberg and Spradlin (1967) studied the effects of language ability on the communication process. They concluded from their results that there is a high positive correlation between language ability and the ability to communicate effectively. The present study was to have investigated this issue in some detail, but for technical reasons the evaluation of language ability during small group problem solving discussions had to be abandoned. However, the investigation was carried out using a sample of language obtained at a later date, although it is recognized that this language sample may be different in some important ways from language used during actual small group problem solving discussions.

Tisdall (1962) and Semmel, Herzog and Jorgenson (1965) each conducted experiments to compare the learning environments for EMR children in regular classrooms with those in special classrooms. The authors concluded from their results that the educational environment of the two types of classes was different. The difference could not be readily detected when evaluations of broad general areas such as academic and social achievement were measured, but was revealed by study of specific processes such as verbal interaction.

Jackson and Lahaderne (1970) investigated the inequalities of pupil-teacher contacts in elementary classrooms. They concluded by

noting that membership in a class did not ensure that class members were living and learning in the same environment, or sharing a common educational experience.

A study by Browne (1971) supported the previous findings. In discussing low ability reading groups in elementary school, she reported that these groups were subject to a greater amount of teacher criticism, were given work which was frequently too difficult for them, and made errors in the response called for by the teacher. The author attributed this latter finding, in part, to the fact that the type of response the low group was most frequently called upon to make exposed them to the possibility of making a greater number of incorrect responses. If this situation exists for other academic subjects as well, which is not improbable, the picture is one of continuous failure and frustration for the slower learners.

In addition to the negative interactions received in the classroom, the EMR appear further handicapped by the nature of their home environments. The relationship between socio-economic status and intelligence and language was expressed by Valetutti (1971) thus:

> Whereas homes which provide superior linguistic models are more likely to produce children with superior linguistic development, and whereas a majority of the functionally retarded come from lower socio-economic backgrounds, the speech function of the mildly retarded may stem not only from intellectual factors but may also be a product of impoverished or restricted language models (p. 455).

Lawton (1968) claimed that lower class language forms ". . . are in some important respects limited in range and control (p. 159)." In the present study and in view of the previously reported difficulties the EMR have in socio-emotional adjustment and in classroom interaction,

it was decided to investigate the language ability of the retarded during interaction, to determine if there was any relationship between this ability, and the ability to function effectively in interpersonal communication. The measure adopted to assess language ability was that of syntactic maturity (Hunt, 1965). The procedure is outlined in Chapter 3.

OUTDOOR EDUCATION SETTING

Bales (1950) claimed that a person is more likely to participate in group discussions if he is interested in, and has competence in, the topic under discussion. Gibson (1966) found great interest in outdoor education among children in Alberta. Outdoor education learning experiences for the present study were chosen, based on an assumption that all participants would begin the activities with somewhat equal pre-learning experiences. Outdoor education activities have the added advantage of being conducted in a setting not traditionally associated with "school" or "learning". Because of this, it was possible to avoid certain negative attitudes toward "school" and "learning" often attributed to the EMR. In addition, it enabled the present investigator to remove the EMR boys from their usual special school placement, where they are, by virtue of this placement, identified as retarded. The assumption was that the removal would offset the detrimental effects of labelling (Farber, 1968).

An outdoor education setting was chosen for this study as it seemed to offer the opportunity to provide the type of environment thought necessary to stimulate the participation of EMR boys. The

active participation and cooperation of the EMR boys was essential if valid measures of their small group behaviour were to be obtained.

CONCLUDING STATEMENT

Chapter 2 reviewed literature related to the small group and group processes in the classroom. Also reviewed was literature pertaining to the segregation-integration issue, cognitive abilities, and language and communication, especially as they relate to the educable mentally retarded. The review concluded with a discussion of outdoor education as a setting for research into the small group behaviour of the educable mentally retarded.

The following chapter will describe the methods and procedures used in the study, the measurement instruments used in the study, and the methods used for the analysis of the data. The chapter also includes the specific hypotheses developed to answer the research questions posed in Chapter 1.

CHAPTER 3

METHOD AND PROCEDURES

This chapter discusses the selection and grouping of subjects, the measurement instruments used, the personnel associated with the project, and the procedures used for collecting and analysing the data.

SUBJECTS

Subjects were chosen from schools administered by the Edmonton Public School Board--twelve boys from a day school for the educable mentally retarded (EMR) and twelve boys from regular classes (Regular). The regular classes from which the boys were chosen were located in four Junior High schools--three boys were to have been selected from each school, but a last day withdrawal of one boy resulted in one school being represented by two boys and another being represented by four boys. Descriptive data are included in Table 1. (See Appendix B).

Actual selection of the boys was left to the school. The following criteria were submitted to school principals to aid in selection:

1. boys aged 13 - 15 years old,
2. who expressed an interest in a camp project and volumteered to participate,
3. who were free from any known serious emotional disorders which may have placed themselves or others in dangerous situations, and
4. who were free from any speech impediment which

would prevent them from participating in group discussion.

In addition boys from regular classes were:

1. judged by the school as of average ability both academically and physically,
2. matched for fathers' occupation with those selected from classes for the educable mentally retarded using the occupational class scale devised by Blishen (1958), and
3. questioned to ascertain if they were familiar with the school for the educable mentally retarded. The procedure used was to administer to prospective subjects a twenty item test ostensibly to evaluate their knowledge of the City of Edmonton. The test is reported in Appendix C. Item fourteen asked where the school for the educable mentally retarded was located and what sort of a school it was. No subjects were able to answer these questions. All but one subject gave immediate replies that they had never heard of the school. Subsequent events at the camp, and at the follow-up interviews, were to confirm the impression, that the boys from the regular classes were not aware they were with boys from a school for the educable mentally retarded.

The criteria for placement in a special class for the educable mentally retarded as issued by the Alberta Department of Education, Pupil

Personnel Services Branch, are:

1. Demonstrable inability, because of mental retardation, to profit from the regular school program. Mental retardation refers to sub-average general intellectual functioning which originates during the developmental period and is associated with impairment in adaptive behaviour.

2. An intellectual quotient in the range of 50 to 75 $\pm$ 5 as measured on an individual intelligence test. Potential for eventual general academic achievement only between grade 3 to 7 level by age 16 (1970, p. 1).

Following preliminary selection by the school, parents of boys were interviewed and the project outlined to them. Where permission for the boys to attend the five day camp was given, permission forms were signed and parents were given a copy of a form outlining the gear needed at the camp. Copies of these forms are contained in Appendix D.

GROUPING

Subjects were allocated to one of three groups. The procedure adopted for allocation was as follows:

1. from the twelve boys from classes for the educable mentally retarded, four boys were randomly selected for Group 3, the remaining eight were allocated to Group 2,

2. from the twelve boys from regular junior high school classes, four boys were randomly selected for Group 3, the remaining eight boys were allocated to Group 1.

This arrangement resulted in three groups as follows: a) Group 1, eight boys, (Regular), b) Group 2, eight boys, (EMR), and c) Group 3, four Regular boys, plus four EMR boys, (Mixed).

For purposes of data analysis, data from Group 3 were analysed initially as one group, and then reanalysed to separate the Regular boys in Group 3 (labelled Group 3 Regular), from the EMR boys in Group 3 (labelled Group 3 EMR).

MEASUREMENT INSTRUMENTS

Bales Interaction Process Analysis (IPA)

Description. The instrument was devised after extensive trials with groups of college students. Bales (1950) analysed twenty-six other systems, and made twelve revisions, before he developed the present system. (A summary of Bales' comments on validity is to be found in Appendix E).

In this system verbal and non-verbal behaviours are recorded in one of twelve categories (see Figure 1). The procedure for recording interaction is for trained recorders to note (using a number code) the source of the behaviour, to whom it is directed, and the category in which the behaviour is classified.

The definition of a scoreable act, together with a comprehensive definition of categories, is provided for recorders (Bales, 1950). With trained recorders the system has proved very reliable, (far more reliable than would be assumed on initial contact with the scheme). Units of behaviour are recorded in sequence. The recordings are then tallied and can be summarized in table form (see Tables 2,3 and 4 Appendix F). From these tallies group profiles can be prepared which enable a ready comparison of the group with, a) other groups used in the

present study, and b) the normative data supplied by Bales (1950, 1970) for adult and Grade IX groups. Individual profiles can also be constructed to compare the interaction of individuals with that of the groups as a whole.

The twelve categories constitute an organized system. Sections A and D reflect behaviour in the socio-emotional related areas. Sections B and C reflect behaviour in the task related areas. The first three categories, 1 - 3, (Section A), are regarded as being in the positive socio-emotional area, the final three categories, 10 - 12, (Section D), are regarded as being in the negative socio-emotional area. Categories 4 - 6, (Section B), reflect the answers attempted to the questions asked in categories 7 - 9, (Section C).

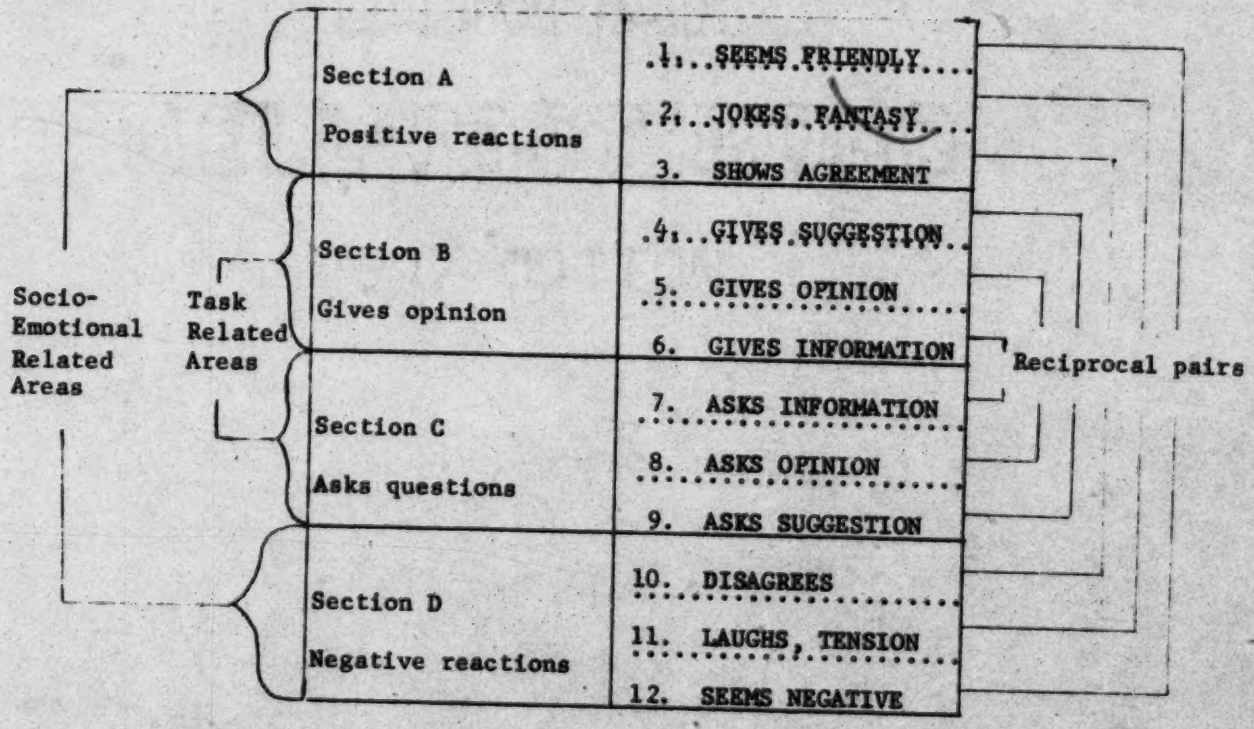

Fig. 1. Bales Interaction Process Analysis: The System of Categories Used in Observation and Their Major Relations

In addition to the categories being grouped in triads, they are also arranged in complementary or opposing pairs. Categories 6 and 7 focus on the problem of communication; categories 5 and 8 focus on problems of evaluation; categories 4 and 9 focus on problems of control over the situation; categories 3 and 10 are related to decision making in the group; categories 2 and 11 are related to tension reduction; and categories 1 and 12 focus on the issue of group solidarity.

Interaction indices. Interaction recorded in these pairs of categories, or in groups of categories are used to derive the interaction indices. The interaction indices are related to the ability of the group to function effectively on problems of interaction such as communication, evaluation, control over the situation, and control over other individuals in the group. According to the Bales' theory of group behaviour, difficulties that arise in interaction as a result of a group's inability to solve these problems will give rise to maladaptive behaviour. Theoretical formulations based on the Bales' theory of group behaviour were expressed by Bales (1950) as a series of hypotheses (see Appendix 6).

The first of these hypotheses is concerned with the problem of communication among group members. Unless members are able to establish adequate communication with each other, the frustration and conflict generated will result in an increase in maladaptive behaviour.

The frequency of behaviour in category 6 (gives information) may be taken as an index of the amount of interaction the group actually devotes to attempted solutions to the problems of communication about

the task. The frequency of behaviour in category 7 (asks for information) may be taken as an index of the amount of interaction the group actually devotes to indicating to each other that problems of communication exist. It is assumed that a balance between asking for information and supplying information is desirable and that any imbalance indicates a breakdown in communication. The index of difficulty of communication (DC) may be expressed as a fraction using category numbers to represent the frequency of acts in that category. The index may be expressed thus:

$$\text{Index of difficulty of communication (DC)} = \frac{\text{Category 7}}{\text{Categories 7 + 6}}$$

Values calculated are in the form of decimals. The higher the figure the greater the degree of difficulty of communication. The absolute value of the index has no meaning apart from comparison with some established norms, with the same group at another time, or with other groups. However, these comparisons can indicate relative differences in the difficulty of communication. The greater the figure the greater the difficulty of communication.

The second of the Bales' hypotheses relates to the ability of group members to evaluate effectively the task. Unless members are able to cooperate in evaluating the task, the frustration and conflict aroused will result in increased maladaptive behaviour. The index of difficulty of evaluation (DE) may be calculated in the same manner as the index of difficulty of communication, but using category 5 (gives opinion) and category 8 (asks opinion). It is assumed a balance

between asking for opinion, and giving opinion exists. Any imbalance in this ratio would indicate a breakdown in evaluation. The index may be expressed thus:

$$\text{Index of difficulty of evaluation (DE)} = \frac{\text{Category 8}}{\text{Categories 8 + 5}}$$

The third of the Bales' hypotheses relates to the ability of group members to offer suggestions that are likely to produce solutions to the problems associated with the task. Unless members are able to cooperate in suggesting solutions to the task problems, the conflict and frustration aroused will result in increased maladaptive behaviour.

The index of difficulty of control over the situation (DCS), may be calculated, as were the previous indices, but using category 4 (gives suggestion) and category 9 (asks for suggestion). It is assumed a balance between asking for suggestions and giving suggestions exists. Any imbalance in this ratio would indicate an increase in the difficulty of control over the situation. The index may be expressed thus:

$$\text{Index of difficulty of control over the situation (DCS)} = \frac{\text{Category 9}}{\text{Categories 9 + 4}}$$

The fourth of Bales' hypotheses relates to the question of how directive individuals become during the problem solving process. The more directive the attempts at problem solving become, the greater is the likelihood of an increase in tension within the group, and with this, an increase in maladaptive behaviour. Of the three types of activity in Section B, activity in category 4 (gives suggestion) is

considered more directive than activity in category 5 (gives opinion), which in turn is more directive than activity in category 6 (gives information). The index of directiveness of control (DiCo) is thus based on a preponderance of activity in category 5 (gives opinion) and category 4 (gives suggestion), compared to activity in category 6 (gives information). The index may be expressed thus:

$$\text{Index of directiveness of control (DiCo)} = \frac{\text{Category 4}}{\text{Categories 4+6}} + \frac{\text{Category 5}}{\text{Categories 5+6}}$$

Each of these four hypotheses contains a statement relating to the fact that failure to cope effectively with the group problems of communication, evaluation, control over the situation and directiveness of control, will result in an increase in maladaptive behaviour. The relationship between these four group problems and maladaptive behaviour is basic to the Bales' theory of group functioning.

The index of maladaptive behaviour (MB), is calculated from the frequencies of behaviour in the socio-emotional areas (Sections A and D). The greater the difficulty experienced by group members in communication, evaluation, control of the situation and directiveness of control, the greater will be the conflict and frustration aroused. This will lead to an increase in activity in the negative socio-emotional area (Section D), or a decrease in the positive socio-emotional area (Section A), or both of these. The result will be an increase in the value of the maladaptive behaviour index. The index may be expressed thus:

$$\text{Index of maladaptive behaviour (MB)} = \frac{\text{Categories (10+11+12)}}{\text{Categories (10+11+12) + (1+2+3)}}$$

The indices, difficulty of communication, difficulty of evaluation, difficulty of control over the situation and directiveness of control may be added together to give the overall index (O-A). The over-all index is a composite index designed to give an overall evaluation of the difficulty being experienced in group interaction.

Individual indices. A second set of indices, the individual indices, attempt to express certain critical aspects of the position of an individual in the problem solving sequences. The indices describe certain relationships between communications addressed to a person and the communications which that person addresses to others.

The first of these indices, the index of direct access to resources (CR), compares the number of questions asked of an individual with the total number of questions asked of all members of the group. In explanation Bales (1950) stated:

> Now, a particular person in a group may be asked questions for many different reasons--perhaps because he will not otherwise participate, or because he expresses himself so poorly that the rest of the group is forced to keep asking questions to determine what he means--but in many instances it would seem to be an indication that the given individual is regarded by others as having command of the resources needed in discussion (p. 165).

The CR index is written:

$$\text{CR index} = \frac{\bar{c}_i}{\bar{C}} \times 100$$

where $\bar{c}$ = total number of acts in section C received by person i

where $\bar{C}$ = sum of all the acts in section C received by all the n individuals.

The third of these indices, the index of positive reactions (ADR), refers to the type of socio-emotional responses generated by attempted answers given in section B. These answers may be interpreted as an attempt to exercise control over the group. This applies particularly to category 4 (gives suggestion) but to the other categories in this section also. This being the case there is value in determining to what degree these attempts at control are answered by positive or negative reactions. The index answers the question: To what extent were the attempts of person i answered positively or negatively as compared to others in the group? The ADR index is written:

$$\text{ADR index} = \frac{(bi)}{(B)} \times \frac{(\bar{a}i)}{(\bar{a}i + \bar{d}i)} \times 100$$

where bi = number of acts in section B initiated by person i

B = sum of the acts in section B initiated by all n members

$\bar{a}i$ = number of acts in section A received by person i

$\bar{d}i$ = number of acts in section D received by person i

The second of the individual indices, the index of indirect access to resources (BR), answers the question: To what extent were the questions of person i answered, as compared to others in the group? The index uses the term "indirect" because person i obtains his information by asking questions of others in the group. The BR index is written:

$$\text{BR index} = \left(\frac{\bar{b}i}{\bar{b}i + ci}\right) \times \left(\frac{\bar{b}i}{B}\right) \times 100$$

where $\bar{b}i$ = number of acts in section B received by person i

ci = number of acts in section C initiated by person i

B = sum of the acts in section B initiated by all n members.

The fourth of the individual indices, the generalized status index (GS), gives a composite view of the overall status of any group member in relation to other members of the group. It combines the scores of the previous three indices and averages that score. This index is written:

$$\text{GS index} = \frac{CR + BR + ADR}{3}$$

Each of the above four indices yields a figure between 0 and 100. The greater the figure the greater is the extent to which that individual is represented as possessing the quality identified.

Summary. The preceding sections have discussed the interaction and individual indices derived from the Bales Interaction Process Analysis (IPA). The maladaptive behaviour index is a measure derived from interaction recorded in the socio-emotional related sections (Sections A and D) of the Interaction Process Analysis. The index of positive reactions (ADR) is also derived from interaction in the socio-emotional related areas (Sections A and D). But for this index the only socio-emotional reactions used in the calculations, are those which are made after interaction occurring in Section B (attempted

answers). The remaining indices are largely derived from interaction occurring in the task related areas (Sections B and C). The ten indices discussed are designed to give an evaluation of the task and socio-emotional behaviour of the group, and of individual members, during group problem solving discussions.

Bales Social Psychological Directions

Bales (1970) elaborated on his previous theories to include a personality description which he called the social psychological directions (SPD's). The descriptions are based on the frequency of acts received and acts initiated as measured by the Interaction Process Analysis (IPA). The method of calculation is described in detail by Bales (1970, pp. 94-99). The process is to compare the number of acts initiated and received by each individual against a range of scores in tables provided by Bales (1970). The comparisons are made for each category of the IPA and over all categories, to identify the directional indicators to be applied for each individual.

The directions obtained by this procedure place an individual in three dimensional space on three orthogonal axes representing, a) a power axis, b) an affect axis, and c) a task performance axis. Each axis is designated by directional signs. Thus power is designated Up, Down (U,D); the affect axis is designated Positive, Negative (P,N); and the task axis is designated Backward, Forward (B,F).

The resulting twenty-seven combinations may be conceived of as a 3 x 3 x 3 cube, each block of which represents a distinctive personality

role. These roles are described in detail by Bales (1970). The central position of this cube is the intersection of the three axes representing a neutral position, or role in the three-dimensional personality space (see Figure 2).

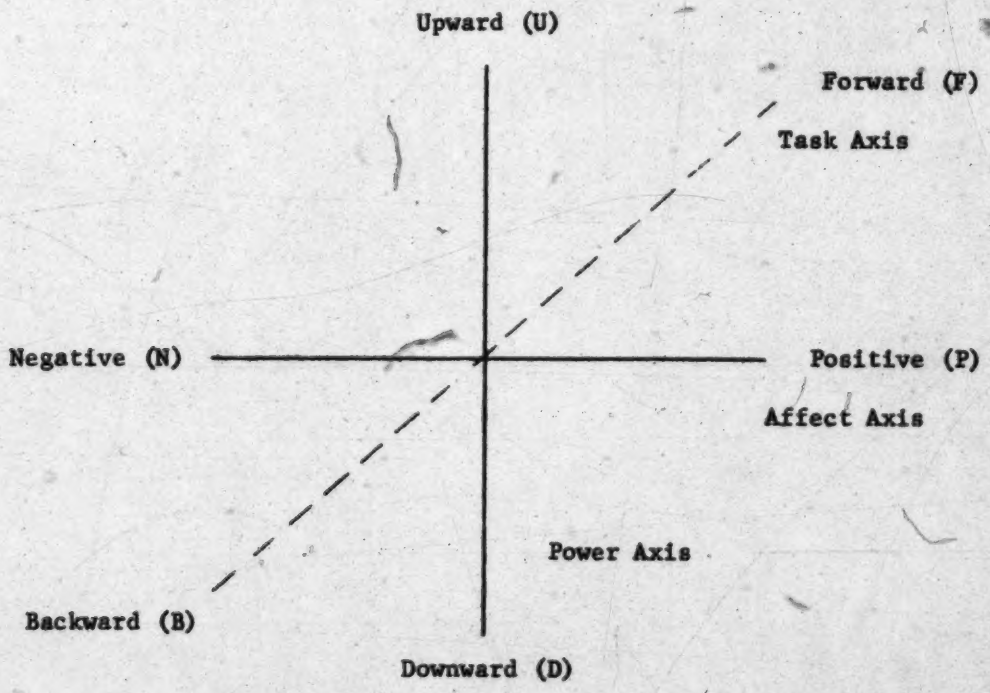

Fig. 2. Bales Description of the Axes of Three-Dimensional Group Space

The three dimensional "group space" concept is directly related to the functional problems Bales considers fundamental in group behaviour. The Up-Down power axis is representative of the problem of adapting to the external demands of the situation. The individual either tries to over-power the situation, or becomes

resigned and submissive to it. The Positive-Negative axis relates to the functional problems of integrating existing social-emotional concerns of group members into the present reality of the group situation. To act in a positive way is to assist integration, to act in a negative way is to encourage the disintegration of the existing social-emotional relationships in the group. The Forward-Backward axis relates to the functional problems of group behaviour. To operate in a forward direction is to aid in the completion of tasks facing the group. To operate in a backward direction is to act in a non-cooperative group manner, or toward individually formulated goals.

In this system any individual in a group can be described as occupying a position in space as defined along three dimensions. The individual positions himself, as a result of his interactions during group problem solving.

Productive Thinking (PT)

The measurement of productive thinking in the present study was based on a system used by Tisdall (1962), to measure productive thinking of educable mentally retarded children. An elaborate scheme for the evaluation of productive thinking during problem solving discussion sessions was not considered practicable. However, it was thought that some effort to check the relevance of the task related behaviour of the subjects should be made, to enable more useful comparisons between groups. Productive thinking was therefore operationally defined as thinking which demonstrated a) originality (PT1), or b) elaboration (PT2), as rated by trained observers. Originality (PT1) was

defined as the initiation of ideas relevant to the topic under discussion. Elaboration was defined as the addition of ideas to a topic already introduced and classified as original. Neither the validity nor the reliability of the instrument was established. but the definitions are based on those devised by Torrance, (1960) for his research into the assessment of creative thinking abilities and which, he states, yielded satisfactory evidence of test-retest reliability, and validity. The combined total was termed fluency (PT3).

Syntactic Maturity (SM)

The measure of syntactic maturity in this study was described by Hunt (1965). Scores in the present investigation were obtained by determining the mean number of words per T-unit in a transcribed passage of an interview conducted approximately two weeks after the completion of the camp. A T-unit is defined as the minimal syntactic unit, that is the shortest possible grammatically complete meaningful utterance. Plans to obtain data from the actual problem solving discussions were abandoned because of the frequency with which interaction consisted of several boys talking at the same time, and the consequent inability to follow the conversation using the video-tape.

Wechsler Intelligence Scale for Children (WISC)

The WISC (Wechsler, 1949) is an individual test of intelligence providing a verbal, a non-verbal and a combined (full scale) measure of intelligence and is frequently used in the evaluation of the

intelligence of the educable mentally retarded.

Vineland Social Maturity Scale (V)

The Vineland Social Maturity Scale (Doll, 1935) is a scale designed to assess social maturity. The items of the scale are arranged in order of increasing difficulty and represent progressive maturation in self-help, self-direction, locomotion, occupation, communication and social relations. The maturation in social independence may be taken as a measure of progressive development in social competence. The raw score for an individual, obtained from the scale, may be converted to a social age score. In the present study parents served as informants for this test.

Behaviour Rating Scale (BR)

The Behaviour Rating Scale (Coopersmith, 1967) consists of thirteen items which are rated on a five-point scale. The items refer to behaviours such as the child's reactions to failure, self-confidence in new situations, sociability with peers and the need for encouragement and reassurance. The behaviours are assumed to be an external manifestation of the individual's self-esteem. Home room teachers (BR1) and camp counsellers (BR2) served as informants for the behaviour rating scale. A sample of the test is included in Appendix H.

Self-Esteem Inventory (SE)

The Self-Esteem Inventory (Coopersmith, 1967) employs fifty

items concerned with the attitude of the subject to peers, parents, school and personal interests. The boys served as their own informants. Particular care was taken to ensure that items were understood by EMR subjects. A sample of the test is included in Appendix I.

Sociogram (SS)

The sociogram (Moreno, 1934) is a technique for studying the social relationships in groups. In the present study data for the compilation of the sociogram were obtained from the home rooms of subjects. Class members were instructed to choose three, from among their classmates, with whom they would like to be teamed to participate in any project that they would enjoy. Two scores were derived from these data in the following manner:

1. scores were weighted by allotting 3 points to first choices, 2 points to second choices and 1 point to third choices; total points for each individual were then summed and expressed as a percentage of the possible score that individual could have obtained in his home room (SS1), and
2. because the class sizes in the home rooms ranged from eight to twenty-four, a second score was derived using a method suggested by Evans (1962). The score was derived by counting the unweighted choices and dividing by $\frac{n}{n-1}$ (SS2).

(The same procedures were applied to derive scores (SS3,SS4) from a sociogram administered at the conclusion of the camp).

Psychomotor Performance (PP)

A measure of psychomotor performance was included because of references (O'Donnell, 1969) to a relationship between physical skill and social status. The experimenter demonstrated the operation of an electronic rotary pursuit apparatus. The boys were then given a short practice on the apparatus. Following the practice, all boys were given a test run of one minute in a clockwise direction, followed by one minute in a counter-clockwise direction, using the preferred hand. The two minute test run was measured using a hidden timer, to give a measure of time-on-target, which was labelled "actual psychomotor performance" (PP).

Adaptation To Camp Environment (AB)

Three counsellors (two female, one male) who had been responsible for the majority of activities conducted outside test activities, and who had not been attached to any one group in particular, were instructed to rank the twenty-four boys on adaptation to the camp environment, which was defined as how well the boys had adapted to the special demands and conditions of the camp. In addition to rank ordering of boys, the counsellors were asked to grade the boys using a 5-point scale: 5 points = excellent; 4 points = very good; 3 points = good; 2 points = fair; 1 point = poor. This procedure gave two scores for adaptation to the camp environment, a ranked score (AB1), and a scaled score (AB2).

STAFF PERSONNEL

The three group leaders used in the study were experienced in acting as group leaders in small groups. Two of the three work full-time in the area of leadership development. All were experienced in leading boys' groups in outdoor education. They each held, or were working on, a Masters degree.

Four camp counsellors were obtained from undergraduate students in education or recreation. All but one of these counsellors had taken courses in special education. One additional counsellor was a graduate student in special education and a former teacher of high school biology.

The two recorders used to record the Interaction Process Analysis had received one hundred hours of training in the use of the system. Reliability trials conducted during training and on selected sections of the data obtained at the camp gave average reliability scores of .8.

The recorders used to rate productive thinking underwent approximately ten hours of practice using transcripts and informal and formal group discussions as the basis for recording. Data recorded during problem solving sessions was checked if necessary by replaying a video-tape of the session. Reliability obtained was in excess of .9 for all sessions.

PROCEDURE

Pre-Tests

The following test scores were obtained for all boys selected

as subjects, a) WISC, b) Vineland social maturity, c) Coopersmith self-esteem, d) Coopersmith behaviour rating, and e) a sociogram. These scores were obtained prior to the camp.

Camp Arrangements

The boys were transported to the Alberta Outdoor Education Centre twenty-three miles north of Hinton, Alberta, for a five-day camp. On arrival each group of boys was allocated to a separate cabin along with a group leader and two counsellers. The purpose of the camp experience was to provide an environment which was assumed to be different from that of the classroom, especially in relation to the style of leadership, method of instruction, and opportunities for decision making.

Test Routine

Test routine for the duration of the camp revolved around the timetable for the four activities and the six problem solving discussion sessions.

The four activities were:

1. a tour of the pulp mill,
2. construction of a nature observation blind,
3. a day-long hike, and
4. a nature-observation walk.

The six problem solving discussion sessions were based on the four activities. Each of the three groups had an opportunity to:

1. plan a day-long hike,
2. evaluate the day-long hike,

3. discuss the merits of closing down the pulp mill,
4. identify objects of, and report on, the local ecology,
5. plan the construction of a nature observation blind, and
6. evaluate the construction of a nature observation blind.

The order of presentation of activities could not be randomized because of timetable limitations. Order was therefore based on the assumption that Group 2 (EMR) would benefit most by planning a hike as their first problem solving discussion session. This assumption was based on a further assumption that although highly motivating, this activity required less abstract reasoning than any other activity planned. It would therefore be more likely to stimulate discussion among the EMR boys, than any other activity.

Discussion sessions were presented to all groups by the present investigator or a camp counsellor in the form of problems to be solved. Details of timetable arrangements are outlined in Appendix J.

Each group also underwent a trial run of the discussion procedure. The purpose of this trial run was:

1. to familiarize the boys with the discussion approach to be used,
2. to expose them to the recorders, both human and mechanical, that were located around the room, and
3. to give the recording team an opportunity to familiarize themselves with the acoustics and seating arrangements of subjects, and to test the video-tape equipment under actual conditions.

The discussion topic for the trial run related to planning the

way in which cabins were to be controlled and administered. Rules of conduct and procedures were left to the decision of the group, the group leader being counted as just one group member. (In fact group leaders were prepared to exercise a veto on any decisions made but this was not found to be necessary--at least during the discussion session. Later, leaders did exercise some measure of veto, but in general effective control was exercised by the group itself.)

Recording was conducted in a lounge of the camp lodge. The boys and leaders were seated in a circle in lounge chairs. A microphone was suspended over a coffee table located in the centre of the group. The video-tape camera was located high above, and behind the group leader. Recording equipment was located behind a stone dividing wall. Four adults sat ten feet outside the group to record the interaction using either the Bales Interaction Process Analysis, or productive thinking scales.

Topics were introduced by the experimenter or an assistant. Introduction consisted of a few remarks to introduce the topic and pose the problems or issues. After the brief introduction, the group was left to itself and recording proceeded until the group leader indicated the session was over. This was usually after about thirty minutes although one session for Group 1 (Regular), was much shorter and one session for Group 2 (EMR) was of longer duration. The boys spent the majority of their day engaged in the specified activities, or in the lounge engaged in discussion. Available free time was spent under the direction of counsellors in traditional camp activities, including canoeing and camp crafts.

It should be noted that there was an emphasis at all times on allowing the boys to determine their own course of action through group discussion and group consensus. Group leaders and camp counsellors had been instructed to be as non-directive as possible, exercising a veto in the interests of safety only. During free time no programs were specifically pre-arranged--it was the responsibility of group members to devise their own program. Adults gave assistance and guidance only as required. Adults present were not aware of the composition of the groups, nor of the fact that twelve of the group were from classes for the EMR. The group leaders and camp counsellors had been instructed not to discuss the boys among themselves at any time.

Post-Tests

On the morning of the fifth and final day, the final battery of tests was administered. The tests were, the sociogram (SS), the Coopersmith Behaviour Rating Scale (BR), psychomotor performance (PP), and the rating of adaptation to the camp environment (AB).

Return Arrangements

Following the completion of the tests, the boys were transported back to Edmonton and deposited at pre-arranged points where they were met by parents.

Follow-up Interview

The video-taping of discussion sessions was to serve several purposes. Firstly, it was to enable recorders to check their recordings

should unforseen circumstances interfere with direct recording of proceedings, or if reliability checks indicated low between-rater reliabilities. The recorders of the productive thinking scale did use the replay equipment for this purpose on a number of occasions. Secondly, the video-tapes were to be used to obtain transcripts of all verbal interaction occurring in the discussion session. This proved to be impracticable, partly because of the quality of the sound, and partly because of the large amounts of simultaneous dialogue and collective talking and shouting. In addition, much of the interaction consisted of single word interjections or exclamations. In view of these problems, it was decided to abandon the attempt to obtain transcripts from the video-tape. Instead, the experimenter interviewed each boy in the second week following the camp. The interview was ostensibly to obtain individual reactions to the camp and suggestions for improvement. The interview was taped. From the tape, transcripts were obtained which were analysed according to Hunt (1965) to give measures of syntactic maturity.

Each interview covered similar material--(What did you enjoy most? What could we do to improve the camp? How did you get along with your fellow campers?)--but as far as possible boys were allowed to talk without direction or interruption. The interviews proved exceedingly valuable as a means of gathering information regarding the overall attitude of boys towards the camp. Details of material covered in these interviews is included in Appendix K.

When the video-tapes of the group discussions at the camp were viewed, and it was decided they were not suitable to use for the

measurement of syntactic maturity, the original hypotheses relating to syntactic maturity were abandoned. They were replaced by hypotheses concerned with the relationship between syntactic maturity, and measures of productive thinking and the measures of the Interaction Process Analysis.

HYPOTHESES

The research questions posed in Chapter 1 are broad general questions, relating to the behaviour of the educable mentally retarded in small group problem solving situations. The following hypotheses were developed with the intention of obtaining specific information on the small group behaviour of the EMR, which could be used to answer the general research questions. The hypotheses are arranged in four groups or sets corresponding to the four research questions in Chapter 1.

1. <u>The first set of hypotheses</u> deal with the expected differences between groups on the measures of productive thinking, syntactic maturity, and the Bales IPA indices.
   - 1.1 For all-session data it was expected that:
     - 1.11 for all the IPA indices significant differences would be found for the between group comparisons,
     - 1.12 for the productive thinking measures significant differences would be found for the between group comparisons,
     - 1.13 for the syntactic maturity measures significant differences would be found for the between group comparisons,

1.2 For the session data it was expected that:

1.21 for all the IPA indices significant differences would be found for the between group comparisons,

1.22 for the productive thinking measures significant differences would be found for the between group comparisons, and

1.23 for the syntactic maturity measures significant differences would be found for the between group comparisons.

2. The second set of hypotheses deal with the expected relationship between the level of syntactic maturity (SM), and those measures predicted as related to effective functioning in the small group.

2.1 It was expected that a significant positive correlation would exist between the measure of syntactic maturity (SM) and:

2.11 the Bales' individual indices (CR, BR, ADR, GS),

2.12 productive thinking scores (PT1, PT2, PT3),

2.13 sociometric status (SS1, SS2, SS3, SS4),

2.14 adaptation to the camp environment (AB1, AB2),

2.15 behaviour ratings (BR1, BR2), and

2.16 self-esteem (SE).

2.2 It was expected that a significant negative correlation would exist between the measure of syntactic maturity (SM) and:

2.21 the Bales' indices of interaction (DC, DE, DCS, DiCo, O-A).

3. The third set of hypotheses, deal with the expected relationship between the index of maladaptive behaviour (MB) and those measures

predicted as related to effective functioning in the small group.

3.1 It was expected that a significant negative correlation would exist between the index of maladaptive behaviour (MB) and:

3.11 the Bales' individual indices (CR, BR, ADR, GS),

3.12 productive thinking measures (PT1, PT2, PT3),

3.13 syntactic maturity (SM),

3.14 sociometric status (SS1, SS2, SS3, SS4),

3.15 adaptation to the camp environment (AB1, AB2),

3.16 behaviour rating (BR1, BR2), and

3.17 psychomotor performance (PP),

3.2 It was expected that a significant positive correlation would exist between the index of maladaptive behaviour and:

3.21 the Bales' indices of interaction (DC, DE, DCS, DiCo, O-A).

4. The fourth set of hypotheses deal with the expected relationship between adaptation to the camp environment, self-esteem, social status, and psychomotor performance, and those measures related to effeotive functioning in the small group.

4.1 It was expected that a significant positive correlation would exist between the measures of adaptation to the camp environment (AB1 and AB2) and:

4.11 the Bales' individual indices (CR, BR, ADR, GS), and

4.12 the productive thinking scores (PT1, PT2, PT3).

4.2 It was expected that a significant positive correlation would exist between the measure of self-esteem (SE) and:

4.21 the Bales' individual indices (CR, BR, ADR, GS), and

4.22 the productive thinking scores (PT1, PT2, PT3).

4.3 It was expected that a significant positive correlation would exist between the measures of sociometric status (SS1, SS2, SS3, SS4) and:

4.31 the Bales' individual indices (CR, BR, ADR, GS), and

4.32 the productive thinking scores (PT1, PT2, PT3).

4.4 It was expected that a significant positive correlation would exist between the measure of psychomotor performance (PP) and:

4.41 the Bales' individual indices (CR, BR, ADR, GS), and

4.42 the productive thinking scores (PT1, PT2, PT3).

ANALYSIS OF DATA

The analysis of data for the present study was primarily carried out using statistical procedures to identify significant differences between groups, or to identify significant correlations between variables. In addition groups were compared using descriptive data derived from the IPA. Comparisons of the IPA performance of groups in the present study were also carried out with normative data reported by Bales (1950, 1970).

Bales Interaction Process Analysis

The body of data collected, as recommended by Bales (1950), was analysed by computer program.

Description. The program summarizes observations of small group interactions using Bales' observer scoring techniques for each session and over all sessions. Frequencies are tabulated for the number of acts initiated and received by each person in each of Bales' categories, for the number of acts directed to each person by each person, and for the number of times each act follows each act. This last table is only available for the over-all sessions case. The inter-person space is plotted based on the simple difference method.

In addition, interaction indices and individual indices for each subject, for each group, for each session, and over all sessions, can be calculated.

Analysis of Variance

A total number of twenty-six measures were obtained for purposes of group comparison. These twenty-six measures were composed of, a) the descriptive data obtained before and after the camp, b) measures of productive thinking, and c) Bales' indices. The productive thinking and Bales' indices measures were obtained for each of the problem solving discussion sessions. These data are referred to as session data. The combination of data for all sessions is referred to as all-session data.

To compare the three groups a one-way analysis of variance was calculated for the twenty-six variables, including the all-session data from productive thinking and Bales' indices measures.

By dividing Group 3 (Mixed) into its two sub-groups, Group 3

(EMR) and Group 3 (Regular), four groups for comparison purposes were obtained. To compare the four groups, a one-way analysis of variance was calculated for the twenty-six variables, including the all-session data from the productive thinking and Bales' indices measures.

For the session data on the productive thinking and Bales' indices measures, a two-way analysis of variance was calculated.

Data from the two-way analysis of variance were analysed further, by an analysis of variance test of the group means for each session (Winer, 1971, p. 518).

Only the three-group comparison of the analysis of variance test of the group means for each session was made, because the four-group comparison would give n's of only four for Groups 3 (Regular) and 3 (EMR), which are too small for this statistical analysis. For similar reasons only the scores for three variables were computed. The Over-all index was chosen as it represented a composite of four indices related to the ability of individuals to function in group situations. Analysis of the individual indices was not practical, since the frequencies of certain category scores was so low as to make the individual session scores somewhat less valid than was desirable. As an example, for problem solving discussion topic one, category 9 (asks suggestion) was not used by Group 1 (Regular), nor by Group 2 (EMR). For problem solving discussion topic two, category 8 (asks opinion) was not used by Group 1 (Regular) nor by Group 3 (Mixed). For problem solving discussion topic four, category 6 (asks information) was used only six times by Group 1 and once by Group 2. (See Tables 2,3 and 4 Appendix F.)

Similarly, the composite productive thinking measure Fluency (PT3), was chosen because the originality score (PT1), in particular, was too small to be meaningful in a session-by-session comparison.

Frequencies were high for the IPA categories on which the Maladaptive Behaviour index was calculated. It is in effect a composite score since it is derived from scores on six IPA categories. The three measures used in the three-group analysis of variance may therefore be regarded as composite scores representing task behaviour, affect behaviour and productive thinking.

Significance: determination and levels. Where significant differences between group means were indicated by the analysis of variance calculations, the source of the differences was determined by a Scheffe Multiple Comparison of Means Test.

The probability accepted as indicating a significant difference was the .05 level of significance.

Correlation

A Pearson's Product Moment Correlation Coefficient was calculated for all twenty-six variables included in the present study. This procedure was adopted in an effort to determine, in broad general terms if, and where, significant relationships existed between the variables. The probability accepted as indicating a significant correlation between variables was the .05 level of significance.

Comparisons of IPA Profiles

In addition to the comparison of groups based on the statistical analysis of data, evaluation of the small group behaviour of the educable mentally retarded was made, based on the Interaction Process Analysis profiles for each of the three groups in the present study. These profiles were compared in the following manner:

1. with each other,
2. with IPA norms provided by Bales (1970) which were derived from data from twenty-one studies,
3. with an IPA profile of an adult group (Bales, 1950), and
4. with an IPA profile of a group of Grade IX boys (Bales, 1950). (Although it is not stated, it is assumed that the IPA data supplied by Bales (1950) are based on intellectually normal subjects.)

Social Psychological Directions

Evaluation of the small group behaviour of the educable mentally retarded was also made using the data of the social psychological directions, (from the Bales IPA). Directions were calculated for each individual. Comparisons were then made of the distribution of the various role types among individuals in the following manner:

1. comparisons of role types among the three groups, and
2. comparison of role types between the EMR boys and the non-retarded boys.

Reliability Procedures

Reliability of the recorders for the Bales Interaction Process Analysis was established during training procedures. Further reliability samples were taken during selected sessions of the actual experimental procedures.

Reliability of the recorders for the productive thinking scale was checked after each session. When significant discrepancies were found to exist, the video-tapes were immediately re-run and the session rerated.

Reliability of the language maturity index was checked by an independent rater using selected passages of the transcript.

A criterion of .8 or better was set for all inter-rater reliability tests using a X^2 method of calculation.

CONCLUDING STATEMENT

Chapter 3 identified the method and procedures used to carry out the present study. The instruments used in the study were described in detail. The specific hypotheses to be tested were itemized, and the methods adopted for the analysis of the data were described.

In the following chapter the results of the investigation are described. The results are discussed in four general sections corresponding to the four research questions posed in Chapter 1.

CHAPTER 4

RESULTS

OVERVIEW

Chapter 4 deals with the results of the investigations into the small group behaviour of the educable mentally retarded. The results are discussed in four sections corresponding to the four research questions posed in Chapter 1. In the first section, data from the statistical analysis, comparisons of IPA profiles and the Bales Social Psychological Directions are used to answer research question 1. In the following sections the answers to the remaining research questions are inferred from data obtained using a Pearson's Product-Moment Correlation Coefficient.

FINDINGS

Research Question 1

How do groups of varying composition compare on measures related to the ability to function effectively in small group problem solving situations?

The first set of hypotheses. The first set of hypotheses (see page 61), developed as a means of investigating research question 1, deal with the expected differences between groups on measures of the Bales IPA indices, productive thinking and syntactic maturity. Comparisons among the groups used in the present study are

made for each problem solving discussion session, and for all sessions combined.

Hypothesis 1.11: For all-session data it was expected that for all the IPA indices, significant differences would be found for the between group comparisons.

Table 5

ANOVA Summary Table : One-Way Analysis of Variance for the Interaction Process Analysis Indices for Three Groups

Dependent Variables	Group Means 1 n=8	2 n=8	3 n=8	MSw df = 2,21	F	P	Significant Between Groups
CR	8.50	9.37	6.25	24.35	.85		
BR	3.87	2.62	3.25	7.35	.43		
ADR	2.87	3.37	3.87	8.74	.23		
GS	5.00	5.12	4.5	10.42	.08		
MB	79.37	71.75	62.50	110.54	5.17	.014	1 - 3*
DC	14.62	13.37	20.25	117.20	.92		
DE	11.75	12.00	6.62	73.02	1.01		
DCS	.25	.12	1.25	1.14	2.68		
DiCo	104.00	76.25	104.62	439.49	4.78	.019	1 - 2* 2 - 3*
O-A	210.00	173.50	194.00	734.76	3.64	.043	1 - 2*

*Significant at the .05 level

The IPA indices for the three groups were analysed by a one-way analysis of variance. Where significant differences were indicated by the analysis of variance, a Scheffe multiple comparison

of means test was carried out to determine between which groups the significance was to be found. The results of these calculations are summarized in Table 5.

A significant difference between Group 3 (Mixed) and Group 1 (Regular) is reported ($p < .05$) for the maladaptive behaviour index (MB). A significant difference is reported ($p < .05$) between Group 2 (EMR) and both Group 1 (Regular) and Group 3 (Mixed) for the Directiveness of Control index (DiCo). A significant difference between Group 2 (EMR) and Group 1 (Regular) is reported ($p < .05$) for the Over-all (O-A) index.

Data for Group 3 (mixed) were separated into two sub-groups comprising those from regular classes (Group 3 Regular) and those from classes for the educable mentally retarded (Group 3 EMR). The IPA indices for these two sub-groups, plus Group 1 (Regular) and Group 2 (EMR), were also analysed by a one-way analysis of variance. Where significant differences were indicated by the analysis of variance, a Scheffe multiple comparison of means test was carried out to determine between which groups the significance was to be found. The results of these calculations are summarized in Table 6.

Table 6

ANOVA Summary Table : One-Way Analysis of Variance for the Interaction Process Analysis Indices for Four Groups

Dependent Variable	Group Means 1 n=8	2 n=8	3 (Reg) n=4	3 (EMR) n=4	MSw (df 3,20)	F	P	Significant Between Groups
CR	8.50	9.37	5.50	7.00	25.34	0.61		
BR	3.87	2.62	2.50	4.00	7.49	0.48		
ADR	2.87	3.75	3.50	2.50	9.12	0.19		
GS	5.00	5.12	4.00	5.00	10.84	0.12		
MB	79.37	71.75	67.75	57.25	105.04	4.33	.016*	1 - 3(EMR)
DC	14.62	13.37	9.50	31.00	76.84	4.94	.009*	1 - 3(EMR) 2 - 3(EMR) 3 - 3 (Reg) (EMR)
DE	11.75	12.00	4.00	9.25	73.91	.91	.452†	
DCS	.25	.12	.50	2.00	.97	3.64	.030*	2 - 3(EMR)
DiCo	104.00	76.25	102.25	107.00	459.21	3.08		
O-A	210.00	173.50	181.50	206.50	709.00	3.11	.049*	† ns

* $P < .05$

† n.s. = non-significant as measured by the Scheffe multiple comparison of means test.

A significant difference ($p < .05$) is reported between Group 1 (Regular) and Group 3 (EMR) for the maladaptive behaviour index (MB). For the difficulty of communication index (DC) a significant difference is reported ($p < .05$) between Group 3 (EMR) and each of the other groups (Group 1 Regular, Group 2 EMR and Group 3 Regular). A significant difference is reported ($p < .05$) between Group 2 (EMR)

and Group 3 (EMR) for the difficulty of control over the situation index (DCS). For the Over-all index (O-A), the F value of 3.11 gives a probability of .049, but the Scheffe multiple comparison of means test fails to identify any significant difference between groups. The difference between Group 1 (Regular) and Group 2 (EMR) does, however, approach significance.

Although a number of significant differences between groups were found, the majority of F ratios calculated were non-significant. In addition, for those indices where significant differences were reported, there did not appear to be any noticeable trend indicating that one group was consistently responding in a way different from the other groups. The hypothesis (1.11) appeared to receive only limited support, and was therefore rejected.

Hypothesis 1.12: For all-session data it was expected that for the productive thinking measures, significant differences would be found for the between group comparisons.

Table 7

ANOVA Summary Table : One-Way Analysis of Variance for the Productive Thinking Scores for Three Groups

Dependent Variables	Group Means 1 n = 8	2 n = 8	3 n = 8	MSw (df = 2,21)	F	P
PT1	16.12	13.25	17.87	277.01	.16	
PT2	53.12	48.75	87.75	2041.42	1.79	
PT3	69.25	62.00	105.62	3600.54	1.21	

The productive thinking scores for the three groups were analysed by a one-way analysis of variance. The results are reported in Table 7. The F ratios reported were all non-significant.

As with the IPA indices, the productive thinking scores were also analysed to test for significant differences between four groups (i.e. separate calculations for Group 3 Regular, and Group 3 EMR). The results are reported in Table 8. The F ratios reported were all non-significant. The hypothesis (1.12) was therefore rejected.

Table 8

ANOVA Summary Table : One-Way Analysis of Variance for the Productive Thinking Scores for Four Groups

Dependent Variable	Group Means 1 n = 8	2 n = 8	3 Regular n = 4	3 EMR n = 4	MSw df = 3,20	F	P
PT1	16.12	13.25	19.75	16.00	289.46	.13	
PT2	53.12	48.75	85.00	90.00	2140.47	1.15	
PT3	69.25	62.00	104.75	106.50	3780.26	.77	

Hypothesis 1.13: For all-session data it was expected that for the syntactic maturity measure, significant differences would be found for the between group comparisons.

Table 9

ANOVA Summary Table : One-Way Analysis of Variance for the Syntactic Maturity Score for Three Groups

Dependent Variable	Group Means 1 n = 8	2 n = 8	3 n = 8	MSw (df = 2,21)	F	P
SM	8.20	7.45	7.70	66.57	1.75	

The syntactic maturity score for the three groups were analysed by a one-way analysis of variance. The results are reported in Table 9. The F ratio reported was non-significant.

Table 10

ANOVA Summary Table : One-Way Analysis of Variance for the Syntactic Maturity Score for Four Groups

Dependent Variable	Group Means 1 n = 8	2 n = 8	3 Regular n = 4	3 EMR n = 4	MSw (df=3,20)	F	P
SM	8.20	7.45	8.12	7.27	62.67	2.01	

The syntactic maturity score for the four groups was analysed by a one-way analysis of variance. The results are reported in Table 10. The F ratio reported for mean number of words per T-unit (SM) was non-significant.

The hypothesis (1.13) was therefore rejected.

Hypothesis 1.21: For the session data it was expected that for all the IPA indices, significant differences would be found for the between group comparisons.

The IPA indices were analysed by a two-way analysis of variance for both the three group and four group comparisons. The purpose of these comparisons was to determine if any significant differences between groups existed as a result of the different requirements of the group tasks. The results are summarized in Table 11.

The only significant difference for the "A" main effects (differences between groups) is reported for the three group comparison of the maladaptive behaviour index. But a number of significant differences for the "B" main effect (differences over sessions) and for the "A" x "B" interaction are reported. However, when the means were plotted for both variables and groups, and the figures compared, no consistent pattern was apparent which would indicate that the discussion session "treatments" were having any selective effect upon any particular group.

To confirm this impression it was decided to analyse the data further, by applying an analysis of variance test to each of the repeated measures, using the procedure outlined in Winer (1971, p. 518). The data are reported in Table 12.

The procedure was applied only to the three group comparisons. The four group comparisons were not analysed in this way because of the small n's associated with Group 3 (Regular) and Group 3 (EMR).

Table 11

Two-Way Analysis of Variance of Groups by Sessions Data for the Interaction Process Analysis Indices

Variable	Source of Variations	For 3 Groups: Group 1 n=8, Group 2 n=8, Group 3 n=8 — MS (df 2,5)	F	P	For 4 Groups: Group 1 n=8, Group 2 n=8, Group 3 (Reg) n=4, Group 3 (EMR) n=4 — MS (df 3,5)	F	P
Index CS	A Main effects	111.383	.878		72.039	.541	
	B Main effects	47.991	.916		23.706	.456	
	AxB Interaction	41.048	.783		48.706	.936	
Index NR	A Main effects	18.271	.391		26.901	.573	
	B Main effects	32.950	3.109	.011	26.040	2.212	
	AxB Interaction	24.496	2.311	.016	14.599	1.343	
Index ANR	A Main effects	12.382	.283		9.670	.212	
	B Main effects	4.737	.505		3.954	.422	
	AxB Interaction	4.282	.454		7.453	.796	
Index GS	A Main effects	7.841	.125		8.920	.137	
	B Main effects	12.440	.783		8.365	.532	
	AxB Interaction	10.899	.686		13.976	.888	
Index NB	A Main effects	1219.250	4.976	.017	769.111	3.003	
	B Main effects	554.900	3.306	.008	489.133	2.886	.017 *
	AxB Interaction	400.800	2.388	.013	319.822	1.887	.033 *
Index DC	A Main effects	606.266	.769		2519.249	4.276	.017 *
	B Main effects	1689.050	3.794	.003	994.849	2.192	
	AxB Interaction	1076.181	2.417	.012	712.289	1.569	
Index DE	A Main effects	2.113	.030		101.031	.373	
	B Main effects	936.757	3.779	.003	727.104	2.871	.018 *
	AxB Interaction	270.115	1.090		202.026	.798	
Index DCS	A Main effects	32.194	2.439		21.393	1.573	
	B Main effects	6.861	.661		13.508	1.522	
	AxB Interaction	6.678	.644		22.390	2.522	.003 **
Index DiCo	A Main effects	1954.750	.580		2079.665	.611	
	B Main effects	4700.898	3.336	.007	1230.533	.875	
	AxB Interaction	11104.547	7.881	.001	7208.418	5.124	.001 **
Index O-A	A Main effects	2467.500	.353		3032.821	.425	
	B Main effects	11376.797	3.973	.002	4313.266	1.499	
	AxB Interaction	15369.848	5.274	.001	10381.262	3.506	.001 **

* $p < .05$

** $p < .01$

Table 12

Comparison of Means of Three Groups for Six Sessions for Maladaptive Behaviour (MB) and Over-All Index (O-A)

Variable	Session Number	MS w. cell (df 2,123)	F	Significant Between Groups
MB	1	181	2.91	
	2		.85	
	3		.62	
	4		1.43	
	5		12.08	3 - 1 **
	6		.32	3 - 2 **
		(df 2,103)		
O - A	1	3592	3.12	3 - 1 *
	2		2.80	
	3		.41	
	4		8.20	2 - 3 **
	5		1.54	1 - 3 **
	6		5.98	2 - 1 **

* $p < .05$

** $p < .01$

Only the maladaptive behaviour index and the over-all index were used in this test, because of the low usage of some of the IPA categories from which the other indices were derived. The maladaptive behaviour and over-all indices also appear most appropriate, as they are representative of the ability of groups to function effectively in the socio-emotional, and task areas of small group functioning.

For the maladaptive behaviour index (MB), inspection of the figures of plotted means suggested a greater incidence of maladaptive behaviour for Group 1 (Regular) than for either of the other two groups. However, only in session five was the difference statistically significant at the chosen level of reporting ($p < .05$), and in this case both Groups 1 (Regular) and 2 (EMR) scored higher than Group 3 (Mixed).

Inspection of the plotted means for the Bales over-all (OA) index revealed extreme fluctuation in performance. Significant differences were found between groups for sessions one, four and six. In session one, Group 1 (Regular) scored significantly ($P < .05$) higher than Group 3 (Mixed). In session four Group 3 (Mixed) scored significantly ($P < .01$) lower than either Group 2 (EMR) or Group 1 (Regular). In session six Group 1 (Regular) scored significantly ($P < .01$) higher than Group 2 (EMR).

Comparison of the results obtained for the six sessions on the two variables measured showed no significant trend which would indicate a "treatment" effect due to sessions. The hypothesis (1.21) was therefore rejected.

Hypothesis 1.22: For the session data it was expected that for the productive thinking measures significant differences would be found for the between group comparisons.

The productive thinking measures were analysed by a two-way analysis of variance as were the IPA indices. No significant differences for the "A" main effects (differences between groups) were found. However, significant differences were found for the "B" main effects (differences over sessions) and the "A" x "B" interaction for each index, and for both the three group and four group comparisons. The data are reported in Table 13.

Table 13

Two-Way Analysis of Variance of Group by Sessions Data for Productive Thinking Scores

Variable	Source of Variation	For 3 Groups: Group 1 n = 8, Group 2 n = 8, Group 3 n = 8			For 4 Groups: Group 1 n = 8, Group 2 n = 8, Group 3 Regular n = 4, Group 3 EMR n = 4		
		MS (df 2,5)	F	P	MS (df 3,5)	F	P
PT1 (Originality)	A Main effects	7.271	.157	.	6.318	.131	
	B Main effects	84.017	5.450	.001	65.178	4.155	.001
	AxB Interaction	42.287	2.743	.004	28.815	1.837	.039
PT2 (Elaboration)	A Main effects	608.674	1.789		408.847	1.146	
	B Main effects	443.557	5.595	.001	651.446	8.495	.001
	AxB Interaction	245.982	3.103	.001	209.449	2.731	.001
PT3 (Fluency)	A Main effects	728.633	1.214		482.319	.766	
	B Main effects	535.291	4.068	.002	783.967	6.025	.001
	AxB Interaction	468.873	3.564	.001	356.666	2.741	.001

The data were further analysed by an analysis of variance test for each of the repeated measures using the procedure outlined in Winer (1971, p. 158). The procedure was applied to the fluency measure (PT3) only, as it was a composite score of the other two measures. The data are reported in Table 14.

Table 14

Comparison of Means of Three Groups for Six Sessions for the Productive Thinking Score, Fluency (PT3)

Variable	Session Number	MS w. cell (df 2,113)	F	Significant Between Groups
PT3 Fluency	1	210	.735	
	2		2.976	1 - 3 **
	3		9.45	2 - 3 **
	4		1.20	2 - 1 *
	5		1.40	
	6		.280	

* P $<$ .05

** P $<$ .01

Inspection of the plotted means for the Fluency score (PT3) of the productive thinking measures revealed extreme fluctuation in performance. However, significant differences were found for Session three only. In this session, Group 3 (Mixed) scored significantly higher (P $<$ .01) than either Group 1 (Regular) or Group 2 (EMR), and Group 1 (Regular) scored significantly higher (P $<$ .05) than Group 2 (EMR).

Comparison of the scores for the three groups over the six sessions revealed no significant trend on the fluency (PT3) score. The hypothesis (1.22) was therefore rejected.

Hypothesis 1.23: For the session data it was expected that for the syntactic maturity measure, significant differences would be found for the between group comparisons.

Unfortunately session data for syntactic maturity was not collected due to a combination of technical difficulties. As a result, no conclusion could be reached for this hypothesis.

Comparisons of Interaction Process Analysis profiles. Bales (1970) calculated a median rate of use of the IPA categories by combining the data from twenty-one different studies which used this instrument. The median rates of use of the IPA categories for each of the groups used in the present study have also been calculated. The median rates are also expressed as percentages of total interaction. The median rates and percentage values for the Bales' groups and the groups used in the present study are reported in Table 15. This procedure facilitates the comparison of performance on the IPA between the groups in the present study and the Bales' groups.

Two features of these comparisons are very apparent. Firstly, the similarity of the use of categories by the three groups in the present study (See Figure 3), and secondly, a marked difference between them and the norms. The three groups in the present study, despite their different compositions, apparently responded to the learning sessions in very similar ways although Group 1 (Regular) appeared to be somewhat less positive, and more negative than either of the other

Table 15

Median Rate of Interaction in Twelve Interaction Process Analysis Categories Expressed as a Percentage of Total Interaction for Three Groups Compared to Norms (Bales, 1970, p. 473)

Category	Group 1		Group 2		Group 3		Norms	
	Median Rate	Percentage	Median Rate	Percentage	Median Rate	Percentage	Median Rate	Percentage
1. Seems friendly	20	10	40	16	23	12	2.3	2.5
2. Jokes, Fantasy	0	1	2	2	11	4	6.2	7
3. Agrees	11	7	15	6	10	9	9.5	11
4. Suggestion	23	12	39	12	13	11	3.7	4
5. Opinion	5	3	6	3	9	5	22.8	25
6. Information	20	10	18	9	9	8	29.0	32
7. Asks information	3	3	4	4	8	4	5.1	6
8. Asks opinion	1	1	1	1	1	1	2.2	2.5
9. Asks suggestion	0	0	0	0	0	1	.4	.5
10. Disagrees	4	2	4	1	6	3	4.4	5
11. Shows tension	89	41	91	33	70	25	2.2	2.5
12. Seems unfriendly	17	10	26	13	32	17	1.6	2

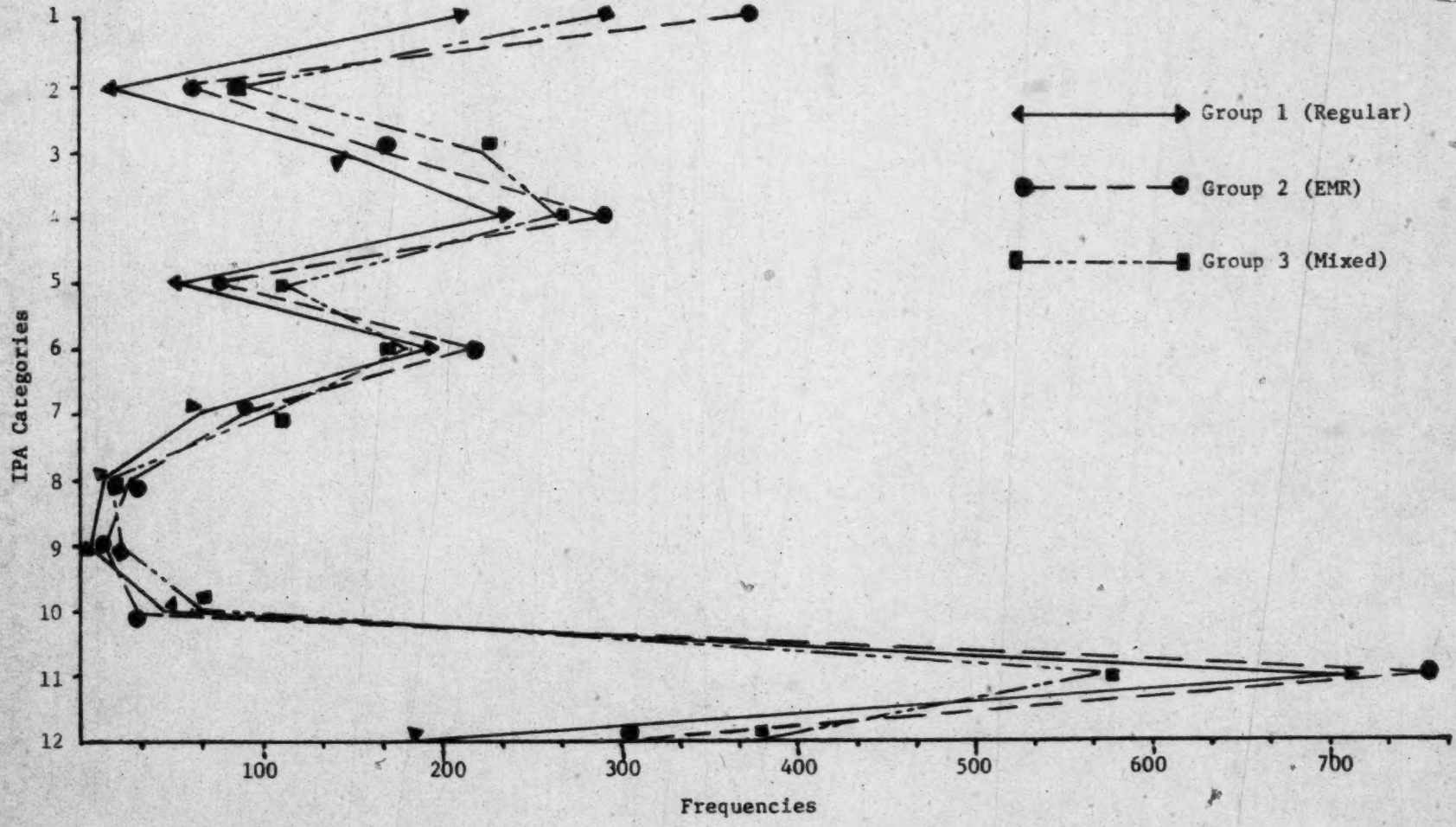

Fig. 3. Profiles of Bales Interaction Process Analysis Categories for Three Groups.

groups.

The greatest discrepancy between the groups in the present study and the Bales' groups occurs for category 11 (shows tension). The groups in the present study exhibited far more behaviour in this category than did the Bales' groups. The same trend exists in category 12 (seems unfriendly). In category 10 (disagrees) the trend is reversed, but the differences here are not large, and the rates are low compared with category 11 (shows tension), and category 12 (seems unfriendly). The total negative behaviour (i.e. Section D or categories 10, 11, 12), is far greater for the groups in the present study than for the Bales' groups.

The same trend is apparent for positive behaviour (i.e. Section A or categories 1, 2, 3), although the difference between the groups in the present study and the Bales' groups is not as great as it was for negative behaviour. The data indicate that the groups in the present study exhibited far more activity in the socio-emotional areas (i.e. Sections A, D), than did the Bales' groups.

In contrast the groups in the present study exhibited far less activity in the task areas (i.e. Sections B, C) than did the Bales' groups. The data for Section C (questions, categories 7, 8, 9) reveal that the Bales' groups asked more questions than the groups in the present study, however, the actual rates for all groups are relatively small, and the differences are not great. The same trend exists for Section B (gives answers, categories 4,5, 6), but here the differences are quite marked. In addition there appears to be a difference in the quality of interaction as revealed by the different

pattern of use of the three categories in this section. Bales (1950) has indicated that interaction in category 4 (gives suggestion) is more directive than interaction in category 5 (gives opinion) or category 6 (gives information). The groups in the present study used category 4 (gives suggestion) more frequently than they used category 5 (gives opinion) or category 6 (gives information). By contrast, the Bales' groups used category 6 (gives information) a little more than they used category 5 (gives opinion) and a good deal more than they used category 4 (gives suggestion).

Bales (1950) reported the IPA profiles for an adult group, and a group of Grade IX boys. Data for the comparison of the groups used in the present study with the Grade IX boys and an adult group are reported in Table 16. The table indicates the percentage of total interaction which occurs in each of the four sections (i.e. Sections A, B, C, D) of the Bales IPA for a) the groups used in the present study, b) the Grade IX boys, and c) an adult group.

The general trend of interaction as revealed by Table 16 is similar to that reported in Table 15 for the Bales' group normative data. The percentages in Section A (positive reactions) and in Section C (questions) are quite similar. However, in Section B (gives answers) the groups used in the present study reveal a substantially lower percentage than the Grade IX boys. An even greater discrepancy exists for the comparison of the groups used in the present study with the adult group. In Section D (negative reactions) the trend is reversed. The groups in the present study show a much higher percentage than the Grade IX boys and an even greater discrepancy exists between them and

the adult group. Overall the groups used in the present study show a greater percentage of use of the socio-emotional areas of the IPA and a lower percentage of use of the task areas of the IPA, than do the adult group. The percentage of use of the socio-emotional and task areas of the IPA for the Grade IX boys lies approximately midway between that of the groups used in the present study and the adult group.

Table 16

Percentages of Total Interaction in Each Section of The Interaction Process Analysis for Three Groups Compared to Norms from Bales (1950)

Section	Group 1	Group 2	Group 3	Grade 9 Boys	Adults
A (Positive reactions)	18	24	25	25	20.5
B (Answers)	25	24	24	46	61
C (Questions)	4	5	6	8	9
D (Negative reactions)	53	47	45	21	9.5

Social Psychological Directions. Bales (1970) gave a method based on the IPA for describing the personality type of individuals. The descriptions, or social psychological directions (SPD's), locate individuals in three dimensional group space, the axes of which are labelled power, affect, and task. The directional indicators, for the power axis are upward (U) and downward (D), for the affect axis positive (P) and negative (N), and for the task axis forward (F) and backward (B). Combinations of these six directional labels gives a total of twenty-seven personality types.

In the present study the boys were located in only three positions in group space, UNF, UF and UPF. (The complete details of the SPD's for all individuals are contained in Appendix L).

Bales (1970) describes the role adopted by each of the three types found in the present study in the following terms:

1. type UNF is oriented toward autocratic authority,
2. type UF is oriented toward group loyalty and cooperation, and
3. type UPF is oriented toward social solidarity and progress.

A more detailed description of these three personality types is to be found in Appendix L.

Several points stand out with regard to the boys in this project. Firstly, the personality categories into which they fell were remarkably few considering the range of possibilities. The variation that did occur was on the affect dimension only, with sixteen boys rated N (negative), five boys rated neither N (negative) nor P (positive), and three boys rated P (positive). On the power and

task dimensions, all boys rated U (Upward) and F (Forward) respectively. Each of the three personality types into which the boys in the present study were allocated is characterized by a high degree of interaction addressed to the group as a whole, rather than to individuals.

Table 17

Social Psychological Directions for Three Groups and Two Intellectual Categories

	Type UNF	Type UF	Type UPF
Group 1	7	1	0
Group 2	6	2	0
Group 3	3	2	3
Totals	16	5	3
EMR	6	4	2
Non-retarded	10	1	1

Table 17 records the number of boys in each group in the present study noted as personality type UNF, type UF, and type UPF. Type UNF is represented by seven boys from Group 1, six boys from Group 2 and three boys from Group 3. Type UF is represented by one boy from Group 1, and by two boys from each of Groups 2 and 3. Type UPF is

represented by three boys from Group 3, but is not represented by any boys from either Groups 1 or 2.

Table 17 also records the number of EMR boys and non-retarded boys rated in each of the three personality descriptions. Type UNF is represented by ten non-retarded boys and by six EMR boys. Type UF is represented by one non-retarded boy and by four EMR boys. Type UPF is represented by one non-retarded boy and by two EMR boys.

Summary. The first research question was concerned with how groups of varying composition compare on measures related to effective functioning in the small group . The first set of hypotheses was developed to compare the groups on measures of productive thinking, syntactic maturity and the Bales' indices. Analysis of variance techniques were applied for three group and four group comparisons. Although a number of statistically significant differences were identified they were comparatively few in number, and did not occur in any consistent pattern among the groups.

A similar result was found for the individual session data. Although a number of significant groups by sessions interactions were obtained, further analysis of these data revealed that there was no pattern apparent in the way these differences occurred for either groups or sessions.

The Social Psychological Directions recorded for the three groups also indicated a similarity in the way the boys in the three groups responded to the small group learning situations. However, the boys in Group 3 (Mixed) appeared to be a little more positive than the

boys in Group 1 (Regular), and a little more negative in their responses to the small group problem solving sessions.

The IPA comparisons between the groups in the present study and the Bales' normative data, the adult group and the Grade IX boys revealed that the groups in the present study exhibited more socio-emotional activity and less task oriented activity. The additional socio-emotional activity consisted mostly of negative reactions, especially activity in category 11 (shows tension). The reduced activity in the task sections of the IPA was due largely to less activity in Section B (gives answers). In addition, the quality of interaction in this section appeared to differ. The boys in the present groups appeared to be more directive in their behaviour, in that they were comparatively high on category 4 (gives suggestion) compared to category 5 (gives opinion) and category 6 (gives information).

Conclusion. From the results of the statistical analysis of data, the comparison of IPA profiles and the Social Psychological Directions, it was concluded that groups of varying composition do not vary substantially from each other, on measures related to effective functioning in small group problem solving situations. However, it was noted that the groups in the present study did appear to be more negative and to give fewer answers compared to the groups reported by Bales (1950, 1970). The interaction of the groups in the present study also appeared to be of a different quality to that reported for the Bales (1950, 1970) groups.

Research Question 2

Does the language maturity of an individual affect his ability to function effectively in small group problem solving situations?

The second set of hypotheses. The second set of hypotheses (See page 62), developed as a means of investigating research question 2, deal with the expected relationship between the level of syntactic maturity (SM), and those measures predicted as related to effective functioning in the small group. The hypotheses specify that a significant positive correlation exists between syntactic maturity (SM) and measures of the Bales' individual indices, productive thinking (PT), adaptation to the camp environment (AB) and self-esteem(SE),as defined in this study, and that a significant negative correlation exists between syntactic maturity (SM) and the Bales' indices of interaction.

Hypothesis 2.11: It was expected that a significant positive correlation would exist between the measure of syntactic maturity (SM), and the Bales' individual indices (CR, BR, ADR, GS).

The correlations between syntactic maturity (SM) and the Bales' individual indices are as follows:

1. the index of direct access to resources (CR) -.06,
2. the index of indirect access to resources (BR) .04,
3. the index of positive reactions (ADR) -.08, and
4. the index of generalized status (GS) -.03.

(The complete details of the correlations are reported in Table 18 in Appendix M.) The correlations do not reach the required level of significance. As a result the hypothesis (2.11) was rejected.

Hypothesis 2.12: It was expected that a significant positive correlation would exist between the measure of syntactic maturity (SM), and the productive thinking scores (PT1, PT2, PT3).

The correlations between syntactic maturity (SM) and the productive thinking scores are as follows:

1. the productive thinking score, originality (PT1) .10,
2. the productive thinking score, elaboration (PT2) .01, and
3. the productive thinking score, fluency (PT3) .03.

(The complete details of the correlations are reported in Table 18 in Appendix M). The correlations do not reach the required level of significance. As a result the hypothesis (2.12) was rejected.

Hypothesis 2.13: It was expected that a significant positive correlation would exist between the measure of syntactic maturity (SM), and sociometric status (SS1, SS2, SS3, SS4).

The correlations between syntactic maturity (SM) and sociometric status scores are as follows:

1. the sociometric status weighted scores obtained in home rooms (SS1) -.30,
2. the sociometric status unweighted scores obtained in home rooms (SS2) .08,
3. the sociometric status weighted scores obtained at the camp (SS3) .06, and

4. the sociometric status unweighted scores obtained at the camp (SS4) -.19.

(The complete details of the correlations are reported in Table 18 in Appendix M). The correlations do not reach the required level of significance. As a result the hypothesis (2.13) was rejected.

Hypothesis 2.14: It was expected that a significant positive correlation would exist between the measure syntactic maturity (SM) and the measures of adaptation to the camp environment (AB1, AB2).

The correlations between syntactic maturity (SM) and adaptation to the camp environment (AB1, AB2) are as follows:

1. the ranked adaptation to camp environment (AB1) .06,

and

2. the scaled adaptation to camp environment (AB2) .08.

(The complete details of the correlations are reported in Table 18 in Appendix M). The correlations do not reach the required level of significance. As a result the hypothesis (2.14) was rejected.

Hypothesis 2.15: It was expected that a significant positive correlation would exist between the measure of syntactic maturity (SM), and behaviour ratings (BR1, BR2).

The correlations between syntactic maturity (SM) and the behaviour ratings are as follows:

1. the behaviour rating score obtained in home rooms (BR1) .17,

and

2. the behaviour rating score obtained at the camp (BR2) .18.

(The complete details of the correlations are reported in Table 18 in Appendix M). The correlations do not reach the required level of significance. As a result the hypothesis (2.15) was rejected.

Hypothesis 2.16: It was expected that a significant positive correlation would exist between the measure of syntactic maturity (SM), and self-esteem (SE).

The correlation between syntactic maturity and self-esteem was calculated as -.05. (The complete details of the correlations are reported in Table 18 in Appendix M). The correlation does not reach the required level of significance. As a result the hypothesis (2.16) was rejected.

Hypothesis 2.21: It was expected that a significant negative correlation would exist between the measure of syntactic maturity (SM), and the Bales indices of interaction (DC, DE, DCS, DiCo, O-A).

The correlations between syntactic maturity (SM), and the Bales' individual indices are as follows:

1. the difficulty of communication index (DC) -.38,
2. the difficulty of evaluation index (DE) -.07,
3. the difficulty of control of the situation index (DCS) -.18,
4. the directiveness of control index (DiCo) .01, and
5. the over-all index (O-A) -.01.

(The complete details of the correlations are reported in Table 18 in

Appendix M). The correlations do not reach the required level of significance. As a result the hypothesis (2.21) was rejected.

Summary. The second set of hypotheses developed to answer research question 2 dealt with the expected relationship between syntactic maturity (SM) and those measures predicted as related to effective functioning in the small group. The relationships were established using a Pearson's Product Moment Correlation Coefficient. No correlation reported reached the required level of significance.

Conclusion. The second set of hypotheses predicting a relationship between syntactic maturity (SM), and those measures predicted as related to effective functioning in the small group, were not substantiated by the results of the present study. As a result it is concluded that given the serious limitations relating to the measurement of syntactic maturity for this particular study, the level of language maturity of the individual was not a factor in his ability to function effectively in the small group problem solving situation.

Research Question 3

Does the level of socio-emotional adjustment of the individual affect his ability to function effectively in small group problem solving situations?

The third set of hypotheses. The third set of hypotheses (See page 63), developed as a means of investigating research question 3, deal with the expected relationship between the index of maladaptive behaviour (MB) and those measures predicted as related to effective

functioning in the small group. The hypotheses specified a significant negative correlation would exist between the index of maladaptive behaviour (MB) and the Bales individual indices, productive thinking measures, syntactic maturity, sociometric status, adaptation to camp environment, behaviour ratings and psychomotor performance. An additional hypothesis predicted a significant positive correlation between the index of maladaptive behaviour (MB), and the Bales indices of interaction.

Hypothesis 3.11: It was expected that a significant negative correlation would exist between the index of maladaptive behaviour (MB) and the Bales' individual indices (CR, BR, ADR, GS).

The correlations between the index of maladaptive behaviour (MB) and the Bales' individual indices are as follows:

1. the index of direct access to resources (CR) -.38,
2. the index of indirect access to resources (BR) -.32,
3. the index of positive reactions (ADR) -.54**, and
4. the generalized status index (GS) -.42*.

* $P < .05$

** $P < .01$

(The complete details of the correlations are reported in Table 18 in Appendix M). The correlations for the index of positive reactions (ADR) and the generalized status index (GS) were found to be significant. The correlations for the direct and indirect access to resources (CR and BR) approached but did not reach significance. The hypothesis (3.11) found only partial support from these data.

Hypothesis 3.12: It was expected that a significant negative correlation would exist between the index of maladaptive behaviour (MB), and the productive thinking measures (PT1, PT2, PT3).

The correlations between the index of maladaptive behaviour (MB) and the productive thinking measures are as follows:

1. the originality score (PT1) -.32,
2. the elaboration score (PT2) -.58 **,

and

3. the fluency score (PT3) -.53 **.

** $P < .01$

(The complete details of the correlations are reported in Table 18 in Appendix M). The correlations for the elaboration score (PT2) and the fluency score are significant. The correlation for the originality score approaches but does not reach significance. The hypothesis (3.12) found considerable support from these data.

Hypothesis 3.13: It was expected that a significant negative correlation would exist between the index of maladaptive behaviour (MB), and syntactic maturity (SM).

The correlation between the index of maladaptive behaviour (MB) and syntactic maturity was calculated as .34. (The complete details of the correlations are reported in Table 18 in Appendix M). The correlation does not reach the required level of significance. As a result the hypothesis (3.13) was rejected.

Hypothesis 3.14: It was expected that a significant negative correlation would exist between the index of maladaptive behaviour (MB), and sociometric status (SS1, SS2, SS3, SS4).

The correlations between the index of maladaptive behaviour (MB) and the measures of sociometric status are as follows:

1. the sociometric weighted scores obtained in home rooms (SS1) -.32,
2. the sociometric unweighted scores obtained in home rooms (SS2) .09,
3. the sociometric weighted scores obtained at the camp (SS3) .00, and
4. the sociometric unweighted scores obtained at the camp (SS4) -.35.

(The complete details of the correlations are reported in Table 18 in Appendix M). The correlations do not reach the required level of significance. As a result the hypothesis (3.14) was rejected.

Hypothesis 3.15: It was expected that a significant negative correlation would exist between the index of maladaptive behaviour (MB), and adaptation to the camp environment (AB1, AB2).

The correlations between the index of maladaptive behaviour (MB), and adaptation to the camp environment are as follows:

1. the ranked adaptation to camp environment (AB1) -.07, and
2. the scaled adaptation to camp environment (AB2) -.07.

(The complete details of the correlations are reported in Table 18 in Appendix M). The correlations do not reach the required level of significance. As a result the hypothesis (3.15) was rejected.

Hypothesis 3.16: It was expected that a significant negative correlation would exist between the index of maladaptive behaviour (MB), and behaviour ratings (BR1, BR2).

The correlations between the index of maladaptive behaviour (MB), and the behaviour ratings (BR1, BR2), are as follows:

1. the behaviour rating score obtained in home rooms (BR1) .11, and
2. the behaviour rating score obtained at the camp (BR2) -.04.

(The complete details of the correlations are reported in Table 18 in Appendix M). The correlations do not reach the required level of significance. As a result the hypothesis (3.16) was rejected.

Hypothesis 3.17: It was expected that a significant negative correlation would exist between the index of maladaptive behaviour (MB), and psychomotor performance (PP).

The correlation between the index of maladaptive behaviour and psychomotor performance was calculated as .24. (The complete details of the correlations are reported in Table 18 in Appendix M). The correlation does not reach the required level of significance. As a result the hypothesis (3.17) was rejected.

Hypothesis 3.21: It was expected that a significant positive correlation would exist between the index of maladaptive behaviour, and the Bales indices of interaction (DC, DE, DCS, DiCo, O-A).

The correlations between the index of maladaptive behaviour and the Bales' individual indices are as follows:

1. the difficulty of communication index (DC) -.26,
2. the difficulty of evaluation index (DE) -.04,
3. the difficulty of control over the situation index (DCS) -.50*,
4. the directiveness of control index (DiCo) -.19,
5. the over-all index (O-A) .12.

*P $<$ .05

(The complete details of the correlations are reported in Table 18 in Appendix M). The correlation for the directiveness of control index is significant (P $<$.05), but the remaining indices fail to reach the required level of significance. The hypothesis (3.21), received only limited support from these data.

Summary. The third set of hypotheses developed to answer research question 3, dealt with the expected relationship between the index of maladaptive behaviour (MB), and those measures predicted as related to effective functioning in the small group. The relationships were established using a Pearson's Product Moment Correlation Coefficient. Significant positive correlations were found between the index of maladaptive behaviour and two of the Bales' individual indices, positive reactions (ADR), and generalized status (GS). In addition

the other two individual indices (direct and indirect access to resources , CR and BR), approached although they did not reach the required level of significance. Significant negative correlations were also found for two of the productive thinking measures, elaboration (PT2), and fluency (PT3). The third of the productive thinking indices, originality (PT1), approached but did not reach the required level of significance. A significant negative correlation was found for the Bales' interaction index, difficulty of control over the situation (DCS). The remaining interaction indices did not reach the required level of significance.

Conclusion. The third set of hypotheses predicting a relationship between the index of maladaptive behaviour (MB), and those measures predicted as related to effective functioning in the small group received some support from the results for the present study. The results of those measures taken during the problem solving discussion sessions are particularly important. Since the Bales' individual indices and the productive thinking measures appear to be very related to task oriented behaviour in the small group, it is concluded that, within the limits of this study, the level of socio-emotional adjustment of the individual does appear to be related to his ability to function effectively in the small group.

Research Question 4

Are adaptive behaviour, self-esteem, social status and psychomotor performance, as defined in this study, related to the

ability to function effectively in small group problem solving situations?

The fourth set of hypotheses. The fourth set of hypotheses (See page 63), developed as a means of investigating research question 4, deal with the expected relationship between adaptation to camp environment, self-esteem, social status, and psychmotor performance, and those measures related to effective functioning in the small group. Scores for adaptation to the camp environment were calculated in two ways:

a) From the rank order of all subjects as judged by camp counsellors (AB1), and

b) From the scores obtained by subjects on a five point scale as rated by camp counsellors (AB2).

Scores for self-esteem (SE) were obtained from the subjects' own responses to the Coopersmith Self-Esteem Inventory (1967).

Scores for social status (SS1, SS2, SS3, SS4) were derived from sociograms conducted a) in the subjects' home rooms, and b) at the camp. The results of the sociogram were analysed a) by allotting weighted values to choices, and b) by an unweighted method. This procedure gave weighted and unweighted scores for both the home room and the camp setting (SS1, SS2, SS3, SS4 respectively).

Scores for psychomotor performance were obtained for the performance of all subjects on an electronic rotary pursuit apparatus.

Hypothesis 4.11: It was expected that a significant positive correlation would exist between measures of adaptation to the camp environment (AB1, AB2), and the Bales' individual indices (CR, BR, ADR, GS).

The correlations between the adaptation to the camp environment scores (AB1 , AB2), and the Bales' individual indices are as follows:

Bales' Individual Indices	AB1	AB2
1. Index of direct access to resources (CR)	.39	.38
2. Index of indirect access to resources (BR)	.34	.35
3. Index of positive reactions (ADR)	.40	.42*
4. Index of generalized status (GS)	.39	.38

* P $<$ .05

(The complete details of the correlations are reported in Table 18 in Appendix M). The correlation between the positive reactions index(ADR) and adaptation to the camp environment (AB2) was significant at the .05 level. All other correlations were close to, but did not reach significance. The hypothesis (4.11) received only limited support.

Hypothesis 4.12: It was expected that a significant correlation would exist between the measures of adaptation to the camp environment (AB1, AB2),and the productive thinking scores (PT1, PT2, PT3).

The correlations between the measures of adaptation to the camp environment (AB1, AB2) and productive thinking (PT1,PT2,PT3) are:

Productive Thinking Scores	AB1	AB2
1. Originality (PT1)	.32	.31
2. Elaboration (PT2)	.38	.40
3. Fluency (PT3)	.38	.39

(The complete details of the correlations are reported in Table 18 in

Appendix M). The correlations were all close to, but did not reach the required level of significance. As a result the hypothesis (4.12) was rejected.

Hypothesis 4.21: It was expected that a significant positive correlation would exist between the measure of self-esteem (SE), and the Bales' individual indices (CR, BR, ADR, GS).

The correlations between self-esteem (SE) and the Bales' individual indices are as follows:

1. the index of direct access to resources (CR) .03,
2. the index of indirect access to resources (BR) .10,
3. the index of positive reactions (ADR) .21, and
4. the index of generalized status (GS) .11.

(The complete details of the correlations are reported in Table 18 in Appendix M). The correlations do not reach the required level of significance. As a result the hypothesis (4.21) was rejected.

Hypothesis 4.22: It was expected that a significant positive correlation would exist between the measure of self-esteem (SE), and the productive thinking scores (PT1, PT2, PT3).

The correlation between self-esteem (SE) and the productive thinking scores are as follows:

1. the originality score (PT1) .02,
2. the elaboration score (PT2) .18, and
3. the fluency score (PT3) .14.

(The complete details of the correlations are reported in Table 18 in Appendix M). The correlations do not reach the required level of

significance. As a result the hypothesis (4.22) was rejected.

Hypothesis 4.31: It was expected that a significant positive correlation would exist between the measures of sociometric status (SS1, SS2, SS3, SS4), and the Bales' individual indices (CR, BR, ADR, GS).

The correlations between sociometric status (SS1, SS2, SS3, SS4) and the Bales' individual indices are as follows:

Bales' Individual Indices	SS1	SS2	SS3	SS4
1. Index of direct access to resources (CR)	.42*	.21	.38	.33
2. Index of indirect access to resources (BR)	.10	.11	.21	.06
3. Index of positive reactions (ADR)	.25	.16	.26	.25
4. Index of generalized status (GS)	.28	.15	.29	.22

* $P < .05$

(The complete details of the correlations are reported in Table 18 in Appendix M). The correlation for the Bales' index of direct access to resources and the weighted sociometric score obtained in the home rooms of subjects is significant at the .05 level. No other correlations approached significance. The hypothesis (4.31) received only very limited support.

Hypothesis 4.32: It was expected that a significant positive correlation would exist between the measures of sociometric status (SS1, SS2, SS3, SS4), and productive thinking scores (PT1, PT2, PT3).

The correlations between sociometric status (SS1, SS2, SS3, SS4) and the productive thinking scores are as follows:

Productive Thinking Scores	SS1	SS2	SS3	SS4
1. Originality (PT1)	.17	.03	.18	.10
2. Elaboration (PT2)	.18	.01	.14	.16
3. Fluency (PT3)	.18	.02	.16	.15

(The complete details of the correlations are reported in Table 18 in Appendix M). The correlations do not reach the required level of significance. As a result the hypothesis (4.32) was rejected.

Hypothesis 4.41: It was expected that a significant positive correlation would exist between the measure of psychomotor performance (PP), and the Bales' individual indices (CR, BR, ADR, GS).

The correlations between psychomotor performance (PP) and the Bales' individual indices are as follows:

1. the index of direct access to resources (CR) -.19,
2. the index of indirect access to resources (BR) .00,
3. the index of positive reactions (ADR) -.05, and
4. the index of generalized status (GS) -.10.

(The complete details of the correlations are reported in Table 18 in Appendix M). The correlations do not reach the required level of significance. As a result the hypothesis (4.41) was rejected.

Hypothesis 4.42: It was expected that a significant positive correlation would exist between the measure of psychomotor performance (PP), and the productive thinking scores (PT1, PT2, PT3).

The correlations between psychomotor performance (PP) and the productive thinking scores are as follows:

1. the originality score (PT1) -.10,
2. the elaboration score (PT2) -.15, and
3. the fluency score (PT3) -.14.

(The complete details of the correlations are reported in Table 18 in Appendix M). The correlations do not reach the required level of significance. As a result the hypothesis (4.42) was rejected.

Summary. The fourth set of hypotheses dealt with the expected relationship between adaptation to the camp environment, self-esteem, social status, and psychmotor performance, and those measures related to effective functioning in the small group. The relationships were established using a Pearson's Product Moment Correlation. Significant correlations were found between a) the Bales' positive reactions index and adaptive behaviour measured at the camp, and b) the Bales' index of direct access to resources and the weighted sociometric score obtained in the home rooms of subjects. All other correlations failed to reach the required level of significance.

Conclusion. The fourth set of hypotheses predicting a significant positive correlation between sociometric status, self-esteem, psychomotor performance, and adaptation to the camp environment, and those measures related to effective functioning in the small group, were not substantiated by the results of the present study. As a result it was concluded that adaptation to the camp environment, self-esteem, sociometric status and psychomotor performance, as defined in this study, are not related to the ability to function effectively in small group problem solving situations.

CONCLUDING STATEMENT

Chapter 4 contained the results of the investigations made into the small group behaviour of the educable mentally retarded. The results were presented in four sections corresponding to the four research questions posed in Chapter 1.

The fifth chapter presents a summary of the study, and a summary of the research findings. The chapter continues with a discussion of the research findings, and the conclusions reached as a result of the study. The chapter concludes with a discussion of the implications of the study, and suggestions for further research.

CHAPTER 5

SUMMARY, CONCLUSION, IMPLICATIONS OF THE STUDY AND SUGGESTIONS FOR FURTHER RESEARCH

SUMMARY

Use of the small group has recently been acclaimed as an effective educational strategy for instructional purposes. The approach appears to offer many of the advantages advocated by those in favour of a child-centered educational environment. But its value for the educable mentally retarded (EMR) remains in doubt. Despite the rapid growth in small group research, little information is available on the small group behaviour of the educable mentally retarded.

Purpose

The purpose of this study was to investigate aspects of the problem solving behaviour of educable mentally retarded boys during small group discussion sessions conducted in an outdoor education setting.

Procedure

Because of lack of information in the area of small group behaviour of the EMR, it was thought appropriate to conduct a general investigation into the question, in a setting likely to encourage participation of the EMR boys. With this purpose in mind, twenty-four boys aged 13 - 15 years were selected for an outdoor education camping experience.

Twelve boys from a school for the educable mentally retarded and twelve boys from regular classes were allocated to three groups.

Group 1 (Regular), was comprised of eight boys from regular classes, Group 2 (EMR) was comprised of eight boys from classes for the educable mentally retarded, and Group 3 (Mixed) was comprised of four boys from the EMR classes and four from the regular classes.

The three groups were transported to an outdoor education centre for a five-day camp. During this time they engaged in four different outdoor education learning experiences. Using these experiences as the basis for discussion, the three groups each engaged in six problem solving discussion sessions. During the problem solving sessions the boys in each of the three groups were required to :

1. plan a day-long hike,
2. evaluate the day-long hike,
3. discuss the merits of closing down the local pulp mill,
4. identify objects of, and report on, the local ecology,
5. plan the construction of a nature observation blind, and
6. evaluate the construction of a nature observation blind.

Each session was introduced as a series of problems, for which solutions were to be recommended, after group consensus had been reached.

The problem solving discussion sessions were conducted in a lounge at the camp lodge. Each group was led by a group leader experienced in outdoor education and small group leadership. The style of leadership applied during the project encouraged the boys to make their own decisions and plan their own programs. During discussion sessions, group leaders were as non-directive as possible, but supportive and encouraging of suggestions initiated by the boys. At all times group cooperation was stressed, and with the exception of the

final morning of the camp, competitive activities were avoided.

All sessions were audio-video taped. The sessions were also observed and rated by observers using the Bales Interaction Process Analysis (IPA) and an instrument for the measurement of productive thinking.

Research Questions

Based on information in the literature relating to the behaviour of the educable mentally retarded, four broad general research questions were posed. The research questions formed the basis of the investigation.

Research question 1. How do groups of varying composition compare on measures related to the ability to function effectively in small group problem solving situations?

Research question 2. Does the language maturity of an individual affect his ability to function effectively in small group problem solving situations?

Research question 3. Does the level of socio-emotional adjustment of the individual affect his ability to function effectively in small group problem solving situations?

Research question 4. Are adaptive behaviour, self-esteem, social status and psychomotor performance, as defined in this study, related to the ability to function effectively in small group problem solving situations?

Hypotheses. To answer these research questions a number of hypotheses were developed to obtain information relating to the general research questions. To obtain data a number of relevant measurement instruments were employed.

Measurement Instruments

Selected measurement instruments were used to obtain data on those factors thought to be relevant to the small group behaviour of the EMR. Data were collected a) during the problem solving discussion sessions, and b) before and after the camp.

The data derived from the problem solving discussion sessions were collected by a) the Bales Interaction Process Analysis (IPA), and b) a system, (based on Tisdall,1962) for rating productive thinking.

Bales Interaction Process Analysis. The problem solving discussion sessions were rated by independent raters trained and experienced in recording the Bales Interaction Process Analysis (1950). From these data were obtained:

1. IPA profiles for each group,
2. the Bales' individual and interaction indices, and
3. the Bales Social Psychological Directions.

Productive thinking scale. The problem-solving discussion sessions were also rated to obtain three measures of productive thinking (Originality, PT_1; Elaboration, PT_2; Fluency, PT_3).

Additional measurement instruments. A number of additional

measurement instruments were employed to obtain data, which it was expected would be related to the small group behaviour of the EMR. Data were obtained from:

1. Wechsler Intelligence Scale for Children (WISC),
2. Vineland Social Maturity Scale (V),
3. Coopersmith Self-Esteem Inventory (SE),
4. Coopersmith Behaviour Rating Scale (BR),
5. a sociogram, (SS),
6. a rating on adaptation to the camp environment (AB),
7. a test of psychomotor performance, (PP), and
8. a test for syntactic maturity (SM).

SUMMARY OF THE FINDINGS

A summary of the major findings of the study is presented under the headings of the four research questions.

Research question 1. The research question asked how groups of varying composition compare in small group problem solving situations. Investigation of the question was carried out by a) statistical analysis of IPA indices, productive thinking measures and a measure of syntactic maturity, b) comparison of IPA profiles of the groups observed in the present study with the IPA profiles of Bales (1970) normative data, an adult group, and a group of Grade IX boys, and c) examination of Bales' psychological directions of group members.

Analysis of variance of the Bales' individual indices indicated no significant differences for either the three group or four

group (Group 3 divided into EMR and Regular sub-groups) comparisons.

A one-way analysis of variance of the Bales' interaction indices for the three group comparisons indicated that for the maladaptive behaviour index (MB), Group 1 (Regular) scored significantly higher than Group 3 (Mixed); that for directiveness of control index (DiCo) and the over-all index (O-A), Group 1 (Regular) scored significantly higher than Group 2 (EMR); that for the directiveness of control index (DiCo), Group 3 (Mixed) also scored significantly higher than Group 2 (EMR). For all differences reported, the level of significance was $P < .05$.

A one-way analysis of variance of the Bales' interaction indices for the four group comparisons indicated significant differences ($P < .05$) for the maladaptive behaviour index (MB), the difficulty of communication index (DC) and the difficulty of control over the situation index (DCS). In each of these instances, Group 3 (EMR) was involved. For maladaptive behaviour (MB), Group 3 (EMR) was significantly lower than was Group 1 (Regular); for the difficulty of communication index (DC), Group 3 (EMR) was significantly higher than for each of the other Groups (Group 1 Regular, Group 2 EMR, Group 3 Regular); and for the difficulty of control over the situation index (DCS), Group 3 (EMR) was significantly higher than was Group 2 (EMR).

The remaining indices were found to have F ratios which were non-significant for both the three-group and four-group comparisons. The hypotheses predicting a significant difference between groups on the Bales IPA data found little support from these comparisons.

The means for the three measures of productive thinking originality (PT1), elaboration (PT2), and fluency (PT3) were also analysed

for significant differences by three group and four group comparisons, using a one way analysis of variance for each variable. The resulting F ratios did not reach the level of significance set for this study ($P < .05$). The hypotheses predicting a significant difference between groups on these measures were rejected.

The means for the measure of syntactic maturity (SM) were analysed for significant differences by three group and four group comparisons. The F ratios for the comparisons were non-significant. The hypotheses predicting a significant difference between groups were rejected.

A two-way analysis of variance was carried out for both the three-group and four-group comparisons of the Bales' indices. The results of this analysis indicated that for the Bales' individual indices little difference existed among the groups. The results for the Bales' interaction indices indicated a trend toward significant F ratios for the "B" main effects (differences between sessions) and for the "A" x "B" interactions (groups x sessions).

To investigate the "A" x "B" interactions an analysis of variance for repeated measures design was employed. The procedure was carried out for the three group comparisons and on three variables, Bales' maladaptive behaviour index (MB), Bales' over-all index (O-A), and the fluency score of the productive thinking measure (PT3). The analysis revealed that the significant interactions occurred as a result of extreme fluctuations in scores from one session to another. There was no evidence of a trend in these fluctuations. No one session or group showed a consistently low or high score.

The hypotheses predicting differences between the groups over

the sessions were rejected.

Comparisons of the IPA profiles of the groups in the present study revealed a high degree of similarity in the use of the twelve IPA categories. The profiles for each group are of the same general shape, and tend to overlap each other. The use of Section C (questions) was very low, but use of Section D (negative behaviour) was very high. However there was considerable variation in the use of the categories in Section D. For example, category 10 (disagrees) was used infrequently but category 11 (shows tension) was used far more frequently than any other of the twelve categories. The rate of use of category 12 (seems unfriendly) was also high. Use of Section A (seems friendly) and Section B (answers) lay between that of the other two sections and was neither exceptionally small nor exceptionally large.

Comparison of the IPA profiles of the groups in the present study with the Bales normative data, indicated that the groups in the present study exhibited far more behaviour in Section D (negative reactions), and less behaviour in Section B (Answers), than did the normative groups. Use of category 11 (shows tension) in Section D was particularly high for the groups in the present study, and contributed most to the large difference in scores between them and the normative groups.

Comparison of the interaction in Section B (answers), revealed some difference in the amount of use of this section, but the difference in the pattern of use of categories in the section was an even more noticeable feature. The groups in the present study used category 4

(gives suggestion), far more than they used category 5 (gives opinion), and category 6 (gives information). In contrast, the Bales' normative groups used category 6 (gives information), more than they used category 5 (gives opinion), and category 4 (gives suggestion).

Comparison of the use of the categories in Section A (positive reactions) and Section C did not reveal any great differences between the groups in the present study and the Bales' normative groups.

Comparison of the IPA profiles of the groups in the present study with those of two groups reported by Bales (1950) revealed the same trend as for the comparisons made with the Bales (1970) normative data. The groups in the present study exhibited far more behaviour in Section D (negative reactions), and less behaviour in Section B (questions), than either the adult group or the Grade IX boys. The level of behaviour in Section A (positive reactions), and Section C (questions), were not substantially different. However, over all sections, the groups in the present study exhibited more interaction in the socio-emotional area (Sections A and D), and less interaction in the task area (Sections B and C), than did either the adult group or the Grade IX boys as reported by Bales (1950).

The Social Psychological Directions for all boys were calculated. Only three role types (UNF, UF and UPF) occurred in the study. Thus all boys were identified as upward (seeking power) on the power dimension, and forward (contributing toward task goals) on the task dimension. On the affect dimension, sixteen boys were rated negative, three were rated positive, and the remainder were rated neutral. Comparisons between groups revealed, that Group 1 (Regular) boys were

more frequently rated negative on the affect dimension than the other groups, while Group 3 (Mixed) had more boys rated positive on the affect dimension than the other two groups. Comparison of the EMR boys with the Regular boys, revealed that the Regular boys tended to be rated negative on the affect dimension more frequently than the EMR boys, and conversely, the EMR boys were more frequently rated positive on the affect dimension.

Research question 2. This research question asked if the language maturity of an individual affected his ability to function effectively in small group problem solving situations. Investigation into this question was carried out by applying a Pearson's Product-Moment Correlation of the individual scores for syntactic maturity, the Bales' indices and productive thinking measures.

The correlations between syntactic maturity and the Bales' indices and productive thinking measures failed to reach the specified level of significance ($P < .05$) for this study.

Research question 3. This research question asked if the socio-emotional adjustment of the individual affects his ability to function effectively in small group problem solving situations. The question was investigated by applying a Pearson's Product-Moment Correlation to the individual scores for the maladaptive behaviour index, and the Bales' indices and the productive thinking scores. Significant negative correlations were found between the maladaptive behaviour index (MB) and two of the Bales' individual indices (positive reactions and generalized status) and two of the productive thinking measures

(elaboration PT_2, and fluency PT_3). In addition, the remaining two Bales' individual indices, and the remaining productive thinking measure, (originality PT_1) approached closely to the specified level of significance ($P < .05$) for this study.

Inasmuch as the individual indices and the productive thinking measures reflect the ability of an individual to function effectively in the task area of small group functioning, the significant negative correlation found in this study suggests that those individuals whose socio-emotional adjustment is poor have difficulty operating effectively in the task related areas of small group problem solving.

Research question 4. This research question asked if adaptation to the camp environment, self-esteem, social status, and psychomotor performance, as defined in this study, related to the ability to function effectively in small group problem solving situations. The question was investigated by applying a Pearson's Product-Moment Correlation to tests of adaptation to the camp environment, self-esteem, social status and psychomotor performance and the scores of the Bales' individual indices and the productive thinking measures.

The only significant correlation reported, occurred between the Bales' index of direct access to resources and the weighted sociometric scores obtained in the home rooms. All other correlations were non-significant. The one significant correlation is not supported by any other data. As a result of the findings of this study it was concluded that adaptation to the camp environment, self-esteem, social status, and psychomotor performance, as defined in this study, are not related to effective functioning in the small

group problem solving situations.

CONCLUSIONS

From these results it was concluded that the groups in the present study did not differ significantly in their abilities to function in small group problem solving situations. In particular, no significant differences between groups were found on measures related to ability to cope with the task and socio-emotional problems of small group interaction, or of their ability to think productively during problem solving discussion sessions.

The profiles of behaviour for the groups in the present study as recorded by the Bales IPA were found to be more typical of that expected from very young children than that expected from young adolescents. Despite some differences between the present study and the Bales' study of Grade IX boys, the marked difference in profiles between these groups supports a conclusion that the boys in the present study demonstrated a less mature form of problem solving behaviour than might reasonably have been expected on the basis of the Bales' data. However, it was noted that one feature of this immature form of problem solving behaviour was the high rate of interaction recorded in category 11 (shows tension). The scores in this one category were largely responsible for the heavy proportion of socio-emotional related behaviour compared to task related behaviour, and for the high scores recorded by most subjects for the maladaptive behaviour index (MB). Since the amount of interaction recorded in category 11 (shows tension), may have been due to insecurity in the problem solving

situation, caution must be exercised in drawing conclusions from these results regarding the small group behaviour of boys similar to those used in the present study.

Further research on the question would need to control for "novelty" effects so as to account for possible feelings by subjects of insecurity in small group problem solving situations. Such control could be achieved by giving the subjects sufficient prior experience in small group problem solving situations to familiarize them with the demands placed on them by this approach to problem solving.

The results of the investigations for each individual session revealed extreme fluctuations in scores by each group. When analysed, the significant differences reported over all sessions were found to be a result of significant differences in just one or two sessions. Furthermore, the significant differences for the sessions showed no consistent trend or pattern. From these results it was concluded that the different learning experiences upon which the discussion sessions were based, and the different requirements involved in each problem solving session, did not affect the way the groups responded. The results are attributed to the fact that the learning tasks did not influence interaction to any noticeable degree, whereas interpersonal conflicts were a prominent feature of many sessions and appeared to play a major role in the pattern of interaction recorded in each session.

The second research question was concerned with the influence of language maturity on the ability to function effectively in small group problem solving situations. Investigation of this question was carried

out by obtaining the correlations between syntactic maturity (SM), and those measures thought to be related to effective functioning in the small group. Correlations between syntactic maturity (SM) and the Bales' individual and interaction indices (CR, BR, ADR, GS, DE, DC, DiCo, DCS, MB, O-A), productive thinking (PT), adaptation to the camp environment (AB), adaptive behaviour ratings (BR), self-esteem (SE) and psychomotor performance (PP), were obtained. No correlations for the second research question were found to be significant. The conclusion reached from these results was that, within the limits of this study, the syntactic maturity of an individual was not related to his ability to function effectively in small group problems solving situations. But because the scores for syntactic maturity were not derived from language samples obtained during the small group problem solving sessions, no conclusion can be reached regarding the effect of syntactic maturity on the ability of the individual to function effectively in such a situation. However, taking into account the fact that the language sample was obtained in interview and that the group differences in syntactic maturity were non-significant, it is possible to say that syntactic maturity (SM), as measured in this study, was not found to be significantly related to effective functioning in the small group problem solving situation.

The third research question was concerned with the influence of the level of socio-emotional adjustment on the ability to function effectively in small group problem solving situations. Investigation of this question was carried out by obtaining the correlations between the Bales' index of maladaptive behaviour (MB), and the remaining Bales' indices (CR, BR, ADR, GS, DC, DE, DCS, DICo, O-A), productive thinking

(PT), syntactic maturity (SM), social status (SS), behaviour ratings (BR), adaptation to the camp environment (AB), self-esteem (SE), and psychomotor performance (PP). Significant negative correlations were obtained for two of the Bales' individual indices and two of the three productive thinking measures. The remaining two Bales' indices and the remaining productive thinking measure were close to the required level of significance. A significant negative correlation with the Bales' index of difficulty of control over the situation (DCS), was also found. The remaining correlations were found to be non-significant. From these results it was concluded that the level of socio-emotional adjustment, as measured by the Bales' index of maladaptive behaviour (MB), has some relationship with the ability to function effectively in small group problem solving situations. The conclusion applies particularly to the task-related areas of small group behaviour. The relationship between the Bales' index of maladaptive behaviour (MB) and the Bales' index of difficulty of control over the situation (DCS), appears to confirm the theoretical position of Bales, that unless group members are able to cooperate in suggesting solutions to task problems, the conflict and frustration aroused will result in increased maladaptive behaviour. It is perhaps surprising that the relationship holds true for individuals as well as for the groups as a whole, but it must also be borne in mind that scores in category 9 (asks for suggestions) are quite small so that the validity of the relationship must be open to some doubt. There is no doubt however, that a relationship exists between maladaptive behaviour and ability to function effectively in the task area of small group problem solving as these functions are measured in this study.

The fourth research question was concerned with the relationship between social status (SS), adaptation to the camp environment (AB), self-esteem (SE), and psychomotor performance (PP), and the ability of the individual to function effectively in small group problem solving situations. Investigation was carried out by obtaining the correlations between these factors and those measures related to effective functioning in the small group, that is the Bales' individual indices and the productive thinking measures. Significant correlations were reported between, a) the Bales' positive reactions index (ADR) and the weighted scores of adaptation to the camp environment (AB2), and,

b) the Bales' index of direct access to resources (CR) and the weighted sociometric scores (SSI), obtained in the home rooms of subjects. The remaining correlations were non-significant. The relationship between the Bales' positive reactions index (ADR) and the weighted scores of adaptation to the camp environment (AB2) appears to reflect agreement in rating between subjects and camp counsellors on their positive attitude towards individual subjects. Since agreement exists for these two functions it is perhaps unexpected that agreement is not reported also for the unweighted scores of adaptation to the camp environment (AB1) nor for the Bales' generalized status index (GS), since these two measures are closely related to the weighted score for adaptation to the camp environment (AB1). This lack of agreement raises some doubts as to the value of the significant relationship reported. The relationship between the Bales' index of direct access to resources (CR), and the weighted sociometric scores (SS1) obtained in the home rooms of subjects is not unexpected, since the criteria applied to the sociogram choices are

closely related to the question of direct access to resources. Again it is surprising that the relationship does not extend to the unweighted sociometric scores (SS2, SS4), or to other factors such as adaptation to the camp environment (AB1, AB2). Indeed what is most noteworthy in the results of this research question is the fact that of all the correlations tested only two reached the prescribed level of significance. It must therefore be concluded that the factors of adaptation to camp environment (AB), sociometric status (SS), self-esteem (SE), and psychomotor performance (PP) do not influence, to any great extent, the ability to function effectively in the small group problem solving situation and are therefore not a reliable basis upon which to form opinions regarding the small group behaviour of individuals.

IMPLICATIONS OF THE STUDY

Lack of Differentiation Among Groups

Design constraints. The most striking feature of the results was the overall similarity in the way the three groups in the present study responded to the problem solving situations. The results may be in part attributable to the efforts made to provide a learning environment which would be advantageous to the EMR boys, but it is unlikely that such arrangements, of themselves, would produce the marked similarity in performance by the groups. Several other factors may have influenced the results. For example, the measuring instruments may not have been adequate or may not have been sufficiently sensitive to distinguish differences which existed; the results may have been a reflection of the fact that to begin with the groups did not differ sufficiently; there may have been two few subjects in the study; the problem solving tasks

may not have been appropriate; the duration of treatment time may have been too brief.

Subject selection constraints. During the selection of subjects to participate in the study, efforts were made to ensure that the Regular and EMR boys were truly representative of their respective intellectual categories. But certain constraints existed, or were placed on the selection procedures, which may have influenced final selection far more than was anticipated. For example, the size of the population was limited. In the case of EMR boys the population of boys in the school system was relatively small, and for the Regular boys the population was made artificially small by being limited to only four schools, and in addition, in two of these schools it was difficult to find suitable occupational matches with the EMR group. Reliance upon the identification procedures carried out by the school system for the identification of EMR children also appeared of importance. Intellectual assessments for the EMR boys selected for the study had been carried out some twelve to eighteen months prior to the present study. It appears possible that those IQ scores may have no longer accurately reflected the capabilities of a number of boys participating in the present study. The same remarks may apply to the behavioural aspect of the criteria, a result which the Principal of the special school would claim, probably with some justification, was partly due to the favourable environment provided by the special school.

Descriptive data. Descriptive data obtained on the subjects gives some support to the view that the groups may not have differed significantly at the commencement of the study. An analysis of variance carried out

on the descriptive data (See Table 19 Appendix N), indicates that only two pre-study measures, the intelligence quotient and sociometric status, produced significant differences between the Regular group (Group 1) and the EMR group (Group 2). But as previously stated, the intelligence quotient had been derived for the EMR boys some considerable time prior to the study so that the validity of the scores may be suspect.

Sociometric data obtained in the home rooms (SS1) also differentiated the groups, and indicated that the EMR boys chosen for the study were selected as desirable work partners by their peers more frequently than were the Regular boys chosen by their peers. Such a result may have been a function of some selection bias on the part of teachers in the schools responsible for pre-selection of subjects. The bias may possibly have taken the form of selecting those who would benefit most from a camp experience and this may have meant in the case of the Regular classes, those boys who were least sought after by peers, and in the case of the EMR classes, those boys most sought after by peers. In addition, a common factor was almost certainly low socio-economic status, (since Regular boys were matched with EMR boys for fathers' occupations and all occupations rated in the low socio-economic bracket). But a difference in this respect existed in the home room situations since all pupils in the special school tended to be of a low socio-economic level, whereas in the Regular classes, taken over all schools cooperating in this project, the number of boys in the low socio-economic levels available for selection purposes was small. In this respect the home room environments differed for the Regular and EMR boys, and these differences may limit the value of the sociometric data. It must be further noted that the sociometric

data are significant only when calculated by the method of weighted scores expressed as a percentage of total possible scores. Using the alternative method, the data do not indicate a significant difference among the groups, which is probably a reflection of the importance of the weighting procedure in calculating group differences. The difference in result between the two methods of calculation does, however, add further doubt to the usefulness of the measure. The implication of the above comparisons is that although differences between the EMR group (Group 2) and the Regular group (Group 1) were obtained, the measures on which the differences were reported may be of suspect value.

In the instances where no significant differences between groups were reported, investigation of the data suggests that here, too, the value of the results may be open to doubt. In the case of the Vineland Scale of Social Maturity, it is the opinion of the experimenter that the scale proved an inappropriate instrument for the subjects of this study. The discrepancies between chronological age and social age were quite marked, yet the items of the test up to the nineteen years age range were within the behavioural repertoire of many of the boys in the present study. For example, several boys, including EMR boys, delivered newspapers in the city and had the responsibility of collecting relatively large sums of money which they paid in weekly at the newspaper office. The collection of money involved travelling about the city during evening hours. In addition, all boys were reported as being capable and being allowed to travel about the city freely at night to attend social functions, and with only a few exceptions, the boys purchased their own clothing. Behaviours such as these enabled the boys in this study to score social ages well

above their chronological ages. As a result of the discrepancies between the chronological ages and the social ages as derived from the Vineland scale, it is suggested that the Vineland scale did not appear to be an appropriate instrument for the determination of social maturity of the type of subject used in the study.

In the case of the Behaviour Rating Scale as reported by home room teachers (BR1), the similarity in scores between the groups may be affected, as was suggested for the sociometric data, by selection bias. After observing the boys at the camp, and studying the results of the sociometric data, it is the opinion of the experimenter that the Regular boys probably would have scored a behavioural rating below the mean for their respective classes, whereas the EMR boys would probably have scored a behavioural rating above the mean for their respective classes. Measurements on all boys in all classes from which subjects were drawn would have been necessary to confirm this opinion, but unfortunately these data were not obtained. The opinion is expressed, not to dispute the similarity in scores obtained, but to indicate the different positions in the social status hierarchies in which the Regular and EMR boys may have been held in the respective home room classes. Some support for the point of view may be found in the analysis of the sociometric data obtained at the camp. In this case the unweighted sociometric scores (SS4), indicate that the boys in Group 2 (EMR) were chosen more frequently than were those in Group 1 (Regular). Interpretation of these data is complicated by the fact that the other method of calculating the sociometric data (weighted scores SS3), does not indicate a significant difference between the groups.

The previous argument may also explain the failure to find the expected difference in scores for the groups on the measure of self-esteem. If the Regular boys and the EMR boys, as groups, represented opposite extremes in the social status hierarchies within their respective classes, the lack of significance in scores on the measure of self-esteem could be interpreted partly as a function of school home room environments. Under these circumstances the data on the measure of self-esteem are less useful than would at first appear.

In relation to the measure of syntactic maturity, as previously noted, the measurements could not be made on samples obtained during the problem solving discussion sessions, but instead were obtained two weeks after the completion of the camp. It is possible that the interview format used to obtain the data was a constraint which influenced the language samples. The interview technique tended to elicit narrative and descriptive language which may have differed in important respects from the more analytical language appropriate to problem solving situations. If this were the case, Regular boys may not have been able to demonstrate in the interview situation a superior language ability which they may have exploited in the problem solving situations of the camp. There is no evidence to suggest that this in fact occurred, but the point is raised to illustrate again that these data may be of limited value for the purpose of group-comparisons on language ability.

Comparison of the groups on measures of syntactic maturity, the social maturity scale, and the behaviour rating scale, suggest that in terms of social maturity and language development the groups did not differ to any great extent. Such a conclusion would appear to have some impli-

cations for the evaluation of the results on measures of behaviour rating and adaptation to the camp environment obtained from camp counsellors at the conclusion of the camp. If the groups did not differ significantly on measures of social maturity and language maturity at the commencement of the camp, the fact that camp counsellors did not distinguish between the two categories of boys on similar measures at the conclusion of the camp is not inconsistent with the earlier results. The similarity in scores for the groups on the measure of syntactic maturity may also explain, in part, the ability of the EMR boys to match the performance of the Regular boys on the measures of the Bales' indices and productive thinking.

The evidence relating to the composition of the groups in the present study is indecisive and equivocal, but the conclusion drawn from the data is that the groups were not as different in composition as might at first appear, and as was intended by the experimenter. Inspection of data for each individual reveals that at least some of the EMR boys appeared to be a rather select sample from the special school, and that as a group the EMR boys may not have been a representative sample of the EMR population. Similarly the Regular boys, because of a restricted population from which they were drawn, may not have been representative of Regular boys, even allowing for the fact they were matched for fathers' occupations with the EMR boys. To this extent, inferences regarding the similarities or differences between pupils of the Regular or EMR categories cannot be drawn satisfactorally from the results of this study.

Comparisons with boys classified as EMR. Notwithstanding the inconclusive nature of the comparisons between the Regular and EMR categories, comparisons between Regular boys and boys classified as EMR remain entirely

valid. Since the difficulties of identifying a representative sample of EMR boys for the study were fully recognized from the beginning, the primary concern of the study was with the boy classified as EMR. This concern developed out of a conviction that many children are incorrectly classified as educable mentally retarded, and out of a conviction that for many of these children the learning environment provided in the traditional classroom aggravates their learning problems.

Problem Solving Behaviour

All-session data. A major focus of the present study was to evaluate the ability of three groups of differing composition to handle the task and socio-emotional problems of small group functioning during problem solving discussion sessions. The evaluations were made using the Bales' IPA indices which purport to indicate the degree of difficulty experienced by the group in solving the task and socio-emotional problems of small group functioning. The productive thinking measure was introduced as an additional measure in an effort to obtain data on the quality of the task related interaction. The results obtained indicated that despite the differing composition of groups, they responded to the problem solving situations in a very similar way. For example, the learning environment at the camp generated a high level of socio-emotional activity, but this response was similar for both the non-retarded and retarded boys and appeared to be more a function of the "novelty" of the environment than any inappropriateness of the environment. The similarity in response could be a direct result of the groups being similar in composition to start with, but it could also reflect an influence of the learning environment on the performance of the EMR boys.

Learning environment. The learning environment provided at the camp seemed to encourage boys classified as EMR to enter into the learning experiences with enthusiasm. This enthusiasm, together with their cooperativeness and the standard of their work, was such as to raise questions in the mind of the experimenter as to whether the teaching style and program offered in EMR classes and special schools are always appropriate. In particular, preconceived notions about the ability of the EMR children to think productively, make decisions for themselves and work cooperatively, do not appear appropriate. These characteristics may be a function of the learning environment as much as a characteristic inherent in the EMR child.

Although no precise attempts were made to evaluate the influence of the environment, the boys were asked to rate the learning tasks on a four point scale. All EMR boys rated the experiences in the top two categories. At the follow-up interview, all expressed enthusiasm for the form of schooling followed at the camp. No doubt their opinions were influenced somewhat by the novelty of the experience and by the attraction of the camp setting, but their replies do indicate that it is possible to create a learning environment about which EMR boys can be enthusiastic.

Another item of incidental evidence regarding the learning environment relates to the use of the oral approach to instruction during learning experiences. On the final morning of the camp, EMR boys were required to write the names of three boys for the purposes of the sociogram. Following this exercise, several counsellors approached the experimenter to express amazement that certain boys could not write legibly nor spell simple names accurately. The realization that these

boys were classified as EMR came to the counsellors only when they observed the difficulty the boys experienced in coping with written language. The use of the oral approach to instruction appears to be of some significance to the question of the successful social integration of children not skilled in reading and writing. The point is supported by the fact that after five days at the camp, the EMR boys were not identified by counsellors on measures relating to their behaviour or their adaptation to the camp environment. There appears to be some grounds for assuming that measures taken to ensure the adequate social integration of EMR boys in the project worked effectively, and that the use of oral methods of instruction was of assistance in the successful integration of EMR boys into the camp environment. The points raised here appear to have important implications for the education of EMR children and their successful integration into a regular school program. The results were certainly not conclusive, but are suggestive enough to warrant further research.

The role adopted by the group leaders may also have been an important factor in the learning environment. At the follow-up interview there was a general expression of admiration for the group leaders by the boys, who with only two exceptions, enjoyed the experience of being given so much opportunity to participate in the planning of their own program. A further factor which probably influenced the environment of the camp was that only the experimenter and one teacher were aware of the nature of the composition of the group. The secret was well kept, for, at the end of the camp only one assistant, (the group leader of Group 2 (EMR)), indicated that he was suspicious about the intellectual level of some of the boys. The fact that all other assistants at the camp were unaware of

the distinction may have had a very positive affect on the learning environment provided for the EMR boys.

Session data. The similarity in response by the three groups to the problem solving situations applied not only to the all-session data but to the data for each session. Although a number of significant differences between groups were reported for individual sessions, no discernible pattern of results was obtained to suggest that the task under discussion had any influence on the results. For example, Group 1 (Regular) boys during their second discussion session (Session 6) were recorded as experiencing difficulty in interaction. The cause of this difficulty may have been related to a miscalculation by the group leader as to the amount of input he should make to initiate discussion. It was the one session in which a group leader tended to dominate the discussion, and in so doing, to stifle group participation. This in turn resulted in difficulties in the communication process. The illustration serves to emphasize that the difficulty in interaction experienced by the group during this particular session was more a function of leadership style than of difficulty inherent in the topic under discussion, or the discussion technique itself. No other group responded in this way to this particular session, nor did any other measures made of the group suggest that the topics under discussion were the cause of difficulty in interaction for this particular group. A similar analysis of other session data which indicated significant differences would be possible, but since the explanations for the extreme variations recorded must necessarily be somewhat speculative, the procedure probably would not be profitable. It must suffice to report that there is no evidence to suggest that the session "treatments" had any

effect on the way groups responded to the problem solving situations.

The reason why the session "treatments" had no effect on the groups may lie partly in the fact that the "treatments" may have been simplistic and did not give the Regular boys an opportunity to demonstrate superior abilities. Such a view, however, is not supported by the data for session three, "discuss the merits of closing down the pulp mill". This topic, in particular, appeared to offer the opportunity for the more analytical boys to show their ability at analysis and evaluation. In fact, no differences among the groups were reported for this session.

The explanation may also lie in the type of problem. Each problem, with the exception of the problem related to the local ecology, could be said to encourage divergent thinking abilities and allow solutions at various levels of sophistication. Such an arrangement may have worked to the advantage of the EMR boys, who under these conditions, may have been encouraged to participate more actively than under conditions associated with more convergent type problem solving situations. Such an explanation provides a positive suggestion as to one aspect of the environment that can be successfully manipulated to encourage participation by EMR children and which may also be of importance in promoting integration.

A further explanation may lie in the fact that the problem solving technique was more important in influencing interaction data than any effects brought about by changes in discussion topics. It appeared to the experimenter that once discussion commenced, the differing nature of the topics for discussion had little influence on the way the discussion developed. Of far greater significance were the dynamics of inter-personal relationships. At times the generation of inter-personal conflicts

threatened to overwhelm the topic under discussion.

Comparisons with Bales (1950, 1970) profiles. Because of a number of constraints, the evaluation of differences in behaviour by the three groups and over the six problem solving discussion sessions proved of limited value. The evaluation of the ability of the groups in the present study to cope with the problems of small group interaction as compared to the Grade IX boys and the adult groups reported by Bales (1950, 1970), was originally of secondary importance in the present study. It is likely, however, that these comparisons were more profitable since they did not suffer from the same constraints, as those which limited the value of the evaluations referred to previously. Despite some obvious differences between the Bales (1950, 1970) groups and those in the present study, comparisons are useful as an indication of any gross differences in Bales IPA profiles which may reflect developmental levels of problem solving behaviour.

Compared to the Grade IX boys and the adult groups reported in Bales (1950, 1970), the groups in the present study demonstrated a far higher incidence of socio-emotional interaction and less task oriented interaction. Considering the relatively small difference in ages that probably existed between the group of Grade IX boys (Bales, 1950) and the boys in the present study, the differences in small group behaviour are quite marked. The differences indicate far more mature problem solving techniques for the Grade IX boys (Bales, 1950), than those employed by the boys in the present study.

Several factors may have contributed to the relatively poorer

problem solving ability of the boys in the present study. One such factor was probably the novelty of the small group experience. Presumably the boys in the present study had not been exposed previously to learning experiences of this type. Whether or not the group of Grade IX boys (Bales, 1950) had previous experience in the technique is not reported. The lack of experience in this type of learning situation may also explain why the rate of response in category 11 (shows tension) of the Bales IPA was so high. The high levels of maladaptive behaviour in the present study, are in many cases, directly attributable to the high scores recorded for the individual in category 11 (shows tension). But the behaviour recorded in category 11 (shows tension), appeared frequently to reflect a state of embarrassment, self-consciousness or confusion on the part of the individual. Undoubtedly these behaviours reflect negative socio-emotional characteristics, but the very high incidence of responses of this type as compared to such negative behaviours as aggression, disobedience, antagonism, and ridicule, appears to place emphasis on a type of negative behaviour which is of a different quality to the behaviours recorded in category 10 (disagrees), and category 12 (seems negative). Negative behaviour recorded in category 11 (shows tension) is self-directed, whereas negative behaviour recorded in the other two categories of this section, is directed against other individuals or the group as a whole. As a result of the high incidence of behaviour in category 11 (shows tension), the incidence of behaviour in the negative socio-emotional section is very high compared to the positive socio-emotional sections, and the task related section of the Bales IPA. The overall results would tend to suggest that the groups in the present study are incapable of

functioning effectively in the small group situation. But if the quality of the negative behaviour which dominates is taken into account, it is apparent that a reduction in the self-directed tension behaviours would result in a much more favourable task to socio-emotional ratio. It seems reasonable to assume that such a result could be achieved by giving the individuals in question more experience in the small group problem solving situation, so as to reduce the insecurity associated with this technique.

Different styles of problem solving behaviour. Some differences between groups in the present study were found in their ability to handle certain aspects of the task related problems of interaction. The differences are not great, but may reflect an important difference in approach to problem solving between Regular boys and boys classified as EMR. The Regular boys are reported as using category 6 (gives information) more frequently than they use category 5 (gives opinion). In comparison with the Bales (1950) groups, the use by both EMR boys and Regular boys of these categories is markedly different. The Bales (1950) groups use category 6 (gives information) frequently and use category 4 (gives suggestion) sparingly. Bales (1950) suggests that the use of the less directive category 6 (gives information) may be a more mature problem solving strategy. These data suggest that EMR children may use less effective problem solving strategies, (that is of giving suggestions as opposed to information), than do normal boys. If this finding were established, the information could be used to form the basis of procedures for teaching the EMR more effective problem solving behaviour.

SES influences. One feature that Regular and EMR boys engaged in this study had in common was that they were matched for fathers' occupations.

The occupations were of the type commonly associated with low socio-economic status. The relationship between socio-economic status and performance in the task and socio-emotional problems of small group functioning was not a problem of direct interest to the present study. However, the results in the present investigation are worthy of note, in that the data suggest that there may be some difficulty experienced by boys of low socio-economic status in handling the problems of small group functioning. The suggestion is only tentative, since there are numerous factors not accounted for which could have influenced the relatively poor performance of the boys in the present study, compared to the Bales (1950) groups. In particular, we have no other groups but the Bales (1950, 1970) groups with which to make comparisons. Unfortunately, certain important descriptive data relating to the subjects of these studies are not reported.

In the present study it had been planned to identify the relationship between syntactic maturity and the ability to cope with the problems of small group functioning. Unfortunately, loss of data prevented any useful evaluation of this question being made. But in view of the reported relationship between language and social class, the relationship between language and small group behaviour could also involve the question of socio-economic status.

Other variables. A further purpose of the study was to ascertain if significant relationships existed between the ability to cope with the problems of small group functioning and such factors as sociometric status, self-esteem, behaviour as rated by camp counsellors and teachers and psychomotor performance. No significant relationships were found. The

implication of these data are that such factors as sociometric status, self-esteem, behaviour ratings and psychomotor performance are not reliable bases upon which to make judgements regarding the ability of the individual to cope with the problems of small group functioning.

Influence of Maladaptive Behaviour (MB). However, significant but negative relationships were reported between the Bales' index of maladaptive behaviour (MB), and measures related to the ability to function effectively on the task aspects of small group functioning, and also the Bales' index of positive reactions (ADR). These relationships indicate that maladaptive behaviour and effective functioning on the task related aspects of small group functioning are incompatible. The implication which may be drawn is that if the maladaptive behaviour could be modified task performance would improve. Such an implication though not directly proved by the reported relationships, is certainly consistent with Bales' view of the dynamics of small group behaviour, so that the reported relationships may be interpreted as supporting Bales' view.

A further implication of these data is that since maladaptive behaviour leads to negative reactions from the group as a whole, maladaptive behaviour by individuals could undermine group cohesiveness. Since cohesiveness is frequently identified as a prerequisite of effective group behaviour, it is apparent that maladaptive behaviour is undesirable not only in individual terms, but for the group as well. The responsibility of the group leader, or teacher, to assist the individual to overcome his behavioural problems may be seen, not only as a responsibility to the individual, but as a responsibility to the group as a whole. Since the rest of the group are involved, there appears to be a need to incorporate

the group in the remediation process.

Instruction in Interpersonal Relations

A procedure to achieve this group therapy approach would be to introduce into the school program a course designed especially to assist children to develop a better understanding of the dynamics of interpersonal relations. The course would need to include some form of small group discussion through which participants could be given the opportunity, under guidance, to evaluate the dynamics of their own behaviour.

The introduction of such instruction into school programs appears to be gaining support from those who hold the view that one of the greatest needs of our time is better interpersonal relationships. The need may be greatest for those, such as the EMR, who may have difficulty in learning effective interpersonal skills without guidance, and who may not be skilled in gauging reaction to their own behaviour without assistance. The evidence of the present study may be interpreted as indicating that boys, such as participated in this study, would benefit by assistance in understanding the dynamics of interpersonal behaviour.

Evaluation of Bales IPA for EMR Groups

A subsidary aim of the present project was to evaluate the Bales IPA as an instrument for the study of the small group behaviour of the educable mentally retarded. Previous studies using this instrument have tended to concentrate on college students, or other groups of presumably normal intelligence. In the present study half the subjects were classified as EMR.

One feature of the use of the Bales IPA with these boys was the

difficulty of recording all on-going reactions. This was because of the frequency with which several boys reacted at the same time. Frequently, disagreements resulted in several boys talking simultaneously. On occasion discussions occurred involving two or more separate sub-groups who carried on in opposition to each other. The inability of subjects to refrain from talking simultaneously imposed a strain on both the recording system and the recorders.

In planning this project it was decided to include measures on productive thinking in an attempt to evaluate the quality of task related interaction. It was thought that the EMR boys in particular might have engaged in interaction which would be classified as task related, but would in fact be unrelated to the topic specified. These concerns proved groundless, as a very high correlation was found between the Bales' indices relating to task performance and the productive thinking measures. No similar attempt to evaluate the quality of socio-emotional related interaction was planned, but such a measure would have been of value. The Bales IPA does not distinguish the quality of socio-emotional related behaviour but only its frequency. For EMR groups the distinction may be important. For example, among the EMR subjects at least two boys appeared to the experimenter occassionally to demonstrate highly disruptive behaviour, yet the amount of maladaptive behaviour calculated for them was not high. Of course the Bales' system is simply recording their performance in the group situation, and over a longer period of time results might have reflected a growing group reaction against the nature of their behaviour, but in the context of this study the results did not reflect adequately the serious nature of their disruptive behaviour. In contrast

to these two boys, those boys who demonstrated a degree of insecurity in the problem solving situation tended to obtain high maladaptive behaviour scores. Certainly these scores must be interpreted as reflecting a degree of maladjustment to a particular group environment, but it in no way reflects the state of adjustment to situations outside that environment. To this extent the measurement of the small group behaviour of the EMR, using the Bales IPA, may benefit by the addition of a measure to evaluate the quality of the socio-emotional behaviour recorded.

In practical terms the Bales IPA may have several other features which would limit its value. For example, the long period of time required to train recorders appears to be a limitation, despite claims of proponents that the time of training is well repaid by the value of the observations. A further possible disadvantage, as reflected in the present investigation, was that despite the twenty-seven possible personality types that are said to be identified by the system, only three types were reported in this study. Thus, the data suggest that the system is not sufficiently sensitive to personality characteristics. But in fairness to the system, it must be noted, that the constraint of procedures required in this investigation may have tended to bias the selection of individuals for this project, so that the results may be a reflection of selection procedures as much as the sensitivity of the system to personality types.

In conclusion, it may be claimed that despite certain limitations inherent in the Bales IPA, the system appeared to have interesting possibilities as one means of evaluating the small group behaviour of boys classified as EMR.

SUGGESTIONS FOR FURTHER RESEARCH

The difficulties experienced in this study of obtaining a group of boys who could unequivocably be identified as belonging to the EMR category leaves the small group behaviour of the EMR a matter awaiting further investigation. The results of the present study, using boys from a special school for the EMR, suggests that such a project would be a profitable area of research.

In particular, the suggestion that the boys in the present study demonstrated an immature problem solving strategy in the small group situation is one aspect of small group behaviour that could be more fully investigated. Associated with this suggestion is the need to identify the cause of the high rate of behaviour in Bales' category 11 (shows tension) exhibited by the groups in the present study. The reasons for the high rate of interaction in the category need to be identified, if the small group is to be considered seriously as an alternative method of instruction for EMR children.

The question as to whether the nature of the task under discussion affects the nature of the interaction was not resolved by this study. The indications were that differences in the nature of the task made no difference to the interaction. However, such a conclusion must be qualified by the recognition that the tasks used in the present study may not have extended the most capable students, and thus did not allow them to demonstrate superior abilities in problem solving. These comments may apply equally as well to the question of productive thinking when the EMR boys performed equally as well as the Regular boys. A study to resolve

these issues seems appropriate. It would need to include tasks requiring more convergent type problem solving strategies than were used in the present study. If this were done, it would be easier to exercise control of the level of difficulty of the problem, than was possible in the present study. As a result, a more clear indication could be expected of the relationship between the task on one hand, and the nature of the interaction and productive thinking abilities on the other hand.

Judging from the comments made during the follow-up interview, the boys who participated in the study were enthusiastic about the learning experiences involved at the camp. The environment provided at the camp was not specifically under investigation during the study. It had been designed using a set of assumptions about the learning conditions that might encourage the active participation of EMR boys, and to this extent it proved quite successful. A useful study would be to attempt to isolate any single factor, or set of factors, which contributed to the enthusiastic response of the participants. Any evaluation of this kind would need to assess, not only such factors as rate of learning as compared to the rate in a more traditional environment, but also the contribution each environment made to the socio-emotional development of the child. The Bales IPA, used in conjunction with other tests of personality, might contribute to a greater understanding of the value of learning environments based on the small group.

Because of failure to measure adequately the language ability of subjects during the small group problem solving situation, the relationship between language and ability to function effectively in the task

and socio-emotional areas of the small group remains unidentified. The investigation of this relationship, together with an investigation into whether the socio-economic status of the individual was involved in the relationship, appears warranted.

The present investigation pointed to the possibility that EMR children might benefit by a course designed to improve their understanding of the dynamics of interpersonal relationships. This suggestion was based on the assumption that improvements in understanding the dynamics of interpersonal behaviour would lead to better interpersonal relations, which in turn would assist the social adjustment of these children and aid their integration with regular children. A further assumption was that a better social adjustment would lead to more effective learning and increased achievement. These assumptions would need to be tested by research before the usefulness of the course in understanding the dynamics of human relationships could be verified.

REFERENCES

REFERENCES

Alberta Department of Education, Pupil Personnel Services Branch. Criteria for special class placement, 1970, mimeo.

Appell, M. J., Williams, C. M., & Fishell, K. N. Significant factors in placing mental retardates from a workshop situation. Personnel and Guidance Journal, 1962, 41, 260-65.

Baldwin, W. K. The social position of the educable mentally retarded child in the regular grades in public schools. Exceptional Children, 1958, 25, 106.

Bales, R. F. Interaction process analysis. Cambridge: Addison-Wesley, 1950.

Bales, R. F. Personality and interpersonal behavior. Cambridge: Addison-Wesley, 1970.

Bany, M. A., & Johnson, L. V. Classroom group behavior. New York: Macmillan, 1964.

Barbee, M. S., Berry, K. L., & Micek, L. A. Relationship of work therapy to psychiatric length of stay and readmission. Journal of Consulting and Clinical Psychology, 1969, 33, 735-38.

Biggs, J. B. Learning: Past and future. Paper presented to the Canadian Education Association Annual Short Course, Banff School of Fine Arts, Banff, Alberta, May, 1972.

Blatt, B. Some experimentally recurring assumptions concerning education of the mentally retarded. In J. H. Rothstein (Ed.), Mental retardation. New York: Holt, Rinehart & Winston, 1971.

Blatt, B. The physical, personality and academic status of children who are mentally retarded attending special classes as compared with children who are mentally retarded attending regular classes. American Journal of Mental Deficiency, 1958, 62, 810.

Blau, P. M., & Scott, W. R. Formal organizations. San Francisco: Chandler, 1963.

Blishen, B. R., Jones, F. E., Naegele, K. D., & Porter, J. Canadian society - Sociological perspectives. Toronto: Macmillan, 1961.

Bovet, M. Piaget's theory of cognitive development, socio-cultural differences and mental retardation. In C. H. Haywood (Ed.), Social-cultural aspects of mental retardation. New York: Meredith Corp., 1970.

Bradford, L. P. Developing potentialities through class groups. Teachers' College Record, 1960, 61, 443.

Browne, M. P. J. An exploratory study of teacher-pupil verbal interaction in primary reading groups. Unpublished doctoral dissertation, University of Alberta, 1971.

Burr, J. B., Harding, L. W., & Jacobs, L. B. Student teaching in the elementary school. New York: Appleton-Century-Crofts, 1950.

Coopersmith, S. The antecedents of self-esteem. San Francisco: Freeman, 1967.

Cruickshank, W. M. (Ed.) Psychology of exceptional children and youth. (3rd ed.) Englewood Cliffs: Prentice-Hall, 1971.

Delaney, J. O. Structure of intellectual and divergent production abilities in the lower intellectual range. Unpublished doctoral dissertation, University of Alberta, 1970.

Delmonaco, [illegible]. M. Individual versus team learning in programmed instruction in grade five. Unpublished doctoral dissertation, Boston University, 1970.

Dinger, J. C. Former educable retarded pupils. Exceptional Children. 1961, 27, 353-360.

Doll, E.A. Vineland social maturity scale: Manual of directions (Rev. Ed.). Minneapolis: Education Test Bureau, 1965.

Drews, E. M. The slow learner, grouping patterns and classroom communications. In R. L. Schiefelbusch, R. H. Copeland, & J. O. Smith (Eds.), Language and mental retardation. New York: Holt, Rinehart & Winston, 1967.

Durrell, D. D. Brief summary of language achievements of mentally retarded children. Boston: Boston University, 1958.

Ellis, N. R. (Ed.) Handbook of mental deficiency. New York: McGraw-Hill, 1963.

Engelmann, S. The effectiveness of direct verbal instruction on I.Q. performance and achievement in reading and arithmetic. In W. C. Becker (Ed.), An empirical basis for change in education. Palo Alto: S.R.A., 1971.

Evans, K. M. Sociometry and education. London: Routledge & Kegan Paul, 1962.

Farber, B. Mental retardation. Boston: Houghton-Mifflin, 1968.

Flanders, M. A. Diagnosing and utilizing social structures in classroom learning. In N. B. Henry (Ed.), The dynamics of instructional groups. Fifty-ninth Yearbook of the National Society for the Study of Education, Part II. University of Chicago Press, 1960.

Gibb, J. R. The effects of human relations training. In A. E. Bergin, & S. L. Garfield (Eds.), Handbook of psychotherapy and behavior change. New York: Wiley, 1971.

Gibson, W. G. Evaluation of outdoor education using Guttman Scales and sociometric analysis. Unpublished master's thesis, University of Alberta, 1966.

Goldstein, I. Implications of mental deficiency. American Journal of Mental Deficiency, 1948, 53, 207-226.

Golembiewski, R. T. The small group. Chicago: University of Chicago Press, 1962.

Gray, W. S. (Ed.) Classroom techniques in improving reading. Chicago: University of Chicago Press, 1949.

Guilford, J. P. The structure of intellect. Psychological Bulletin, 1956, 53, 267-293.

Guskin, S. L., & Spicker, H. H. Educational research in mental retardation. In N. R. Ellis (Ed.), International review of research in mental retardation. Vol. 3. New York: Academic Press, 1968.

Hare, A. P. Handbook of small group research. New York: Free Press, 1962.

Heathers, G. School organization: Nongrading dual progress and team teaching. In J. I. Goodlad (Ed.), The changing American school. Sixty-fifth Yearbook of the National Society for the Study of Education, Part II. Chicago: University of Chicago Press, 1965.

Hunt, K. W. Grammatical structures written at three grade levels, National Council of Teachers of English. Research Report No. 3. Champaign, Illinois: N.C.T.E., 1965.

Jackson, P. W., & Lahaderne, H. M. Inequalities of teacher-pupil contacts. In M. B. Miles, & W. W. Charters (Eds.), Learning in social settings. Boston: Allyn & Bacon, 1970.

Johnson, L. V., & Bany, M. A. Classroom management: Theory and skill training. London: Collier-Macmillan, 1970.

Johnson, O. G.. The study of the social position of mentally handicapped children in the regular grades. American Journal of Mental Deficiency, 1950, 55, 60.

Kinnick, B. C. Group discussion and group counselling applied to student problem solving. In R. C. Diedrich, & H. A. Dye (Eds.), Group procedures: Purposes, processes, and outcomes. New York: Houghton-Mifflin, 1972.

Kirk, S. A. Educating exceptional children. Boston: Houghton-Mifflin, 1962.

Kirk, S. A. Educating exceptional children. (2nd ed.) Boston: Houghton-Mifflin, 1972.

Koumin, J. The meaning of rigidity: A reply to Heinz Werner. Psychological Review, 1948, 55, 157-166.

Lawton, D. Social class, language and education. London: Routledge & Kegan Paul, 1968.

Lippitt, R., & Gold, M. Classroom social structure as a mental health problem. Journal of Social Issues, 1959, 15, 40.

Maslow, A. Motivation and personality. New York: Harper, 1954.

McLeish, J., Matheson, W., & Park, J. The psychology of the learning group. London: Hutchinson, 1973.

Moreno, J. L. Who shall survive? Washington, D.C.: Nervous and Mental Disease Publishing Co., 1934.

O'Donnell, P. A. Motor and haptic learning. San Rafael, California: Dimensions Publishing Co., 1969.

Peckham, R. A. Problems in job adjustment of the mentally retarded. American Journal of Mental Deficiency, 1951, 56, 448-453.

Plenderleith, M. Discrimination learning and discrimination reversal learning in normal and feeble-minded children. Journal of Genetic Psychology, 1956, 88, 107-112.

Quay, I. C. Academic skills. In N. R. Ellis (Ed.), Handbook of mental deficiency. New York: McGraw-Hill, 1963.

Reiss, P. Implications of Piaget's developmental psychology for mental retardation. American Journal of Mental Deficiency, 1967, 72, 361-369.

Rosenberg, S., & Spradlin, J. E. Social interaction. In R. L. Schiefelbusch, R. H. Copeland, & J. O. Smith (Eds.), Language and mental retardation. New York: Holt, Rinehart & Winston, 1967.

Rouse, S. T. Effects of a thinking program on the productive thinking of educable mental retardates. American Journal of Mental Deficiency, 1965, 69, 666-673.

Schiefelbusch, R. L. Language studies of mentally retarded children: Introduction. Journal of Speech and Hearing Disorders, 1963, Monograph Supplement No. 10, 3-7.

Schlanger, B. B. Issues for speech and language training of the mentally retarded. In R. L. Schiefelbusch, R. H. Copeland, & J. O. Smith (Eds.), Language and mental retardation. New York: Holt, Rinehart & Winston, 1967.

Schmuck, R. A., & Schmuck, P. A. Group processes in the classroom. Dubuque, Iowa: W. C. Brown, 1971.

Semmel, M. I., Herzog, B., & Jorgenson, F. A pilot study of the verbal interaction of regular elementary classes and special classes for the educable mentally retarded. In H. L. Lane (Ed.), Studies in Language and language behavior. Vol. 1. Ann Arbor: Center for Research in Language and Language Behavior, 1965.

Shepp, B. E., & Turrisi, F. D. Learning and transfer of mediating responses in discriminative learning. In N. R. Ellis (Ed.), International review of research in mental retardation. Vol. 2. New York: Academic Press, 1966.

Siegel, G. M. Language behavior of adults and children in interpersonal assemblies. Journal of Speech and Hearing Disorders, 1963, Monograph Supplement No. 10, 32-38.

Smith, R. M. Creative thinking abilities of E.M.R. children in regular grades. American Journal of Mental Deficiency, 1967, 71, 571-575.

Spradlin, J. E. Language and communication in mental defectives. In N. R. Ellis (Ed.), Handbook of mental deficiency. New York: McGraw-Hill, 1963.

Spradlin, J. E. Procedures for evaluating processes associated with receptive and expressive language. In R. L. Schiefelbusch, R. H. Copeland, & J. O. Smith (Eds.), Language and mental retardation. New York: Holt, Rinehart & Winston, 1967.

Stanton, J. E., & Cassidy, V. M. Effectiveness of special classes for educable mentally retarded. Mental Retardation, 1964, 2, 1-8.

Stern, W. F., & Spiegal, A. D. Helping all handicapped. Rehabilitation Literature, 1970, 31, 66-73.

Stevens, H. A., & Heber, R. (Eds.) Mental retardation: A review of research. Chicago: University of Chicago Press, 1964.

Stevenson, H. W., & Zigler, E. Discrimination, learning and rigidity in normal and feebleminded individuals. Journal of Genetic Psychology, 1957, 88, 107-112.

Telford, C. W., & Sawrey, J. M. The exceptional individual. Englewood Cliffs: Prentice-Hall, 1967.

Tisdall, W. J. Productive thinking in retarded children. Exceptional Children, 1962, 29, 36-41.

Torrance, E.P., Yamamoto, L., Schenitzki, L., Palamutlu, N., & Luther, B. Assessing the creative thinking abilities of children. Minneapolis: Bureau of Educational Research, University of Minnesota, October, 1960.

Valletutti, P. Language of the mildly mentally retarded: Cognitive deficit or cultural difference? Exceptional Children, 1971, 37, 455.

Wechsler, D. Wechsler intelligence scale for children (WISC), 1949.

Winer, B. J. Statistical principles in experimental design. (2nd ed.) New York: McGraw-Hill, 1971.

Worth, W. H. Report of the Commission on Educational Planning. Edmonton: L. S. Wall (Queen's Printer), 1972.

Young, M. A. Academic requirements of jobs held by the educable mentally retarded in the state of Connecticut. American Journal of Mental Deficiency, 1958, 62, 792-802.

Young, M. F. D. An approach to the study of curricula as socially organized knowledge. In M. F. D. Young (Ed.), Knowledge and control. London: Collier-Macmillan, 1971.

Zigler, E. Social deprivation and rigidity in the performance of feebleminded children. Journal of Abnormal and Social Psychology, 1961, 62, 413-421.

Zigler, E. Research in personality structure in the retardate. In N. R. Ellis (Ed.), International review of research in mental retardation. Vol. 1. New York: Academic Press, 1966.

APPENDICES

APPENDIX A

Problem Solving Discussion Sessions

Appendix A

Problem Solving Discussion Sessions and Tasks

The day-long hike was presented first, as a planning task and following the hike, as an exercise in evaluation. Initially, the group has to make choice decisions regarding where to go, what to take, how to carry the equipment and other related details. These questions formed the basis for problem solving discussion session number one. Following the hike, the group was required to evaluate the experience in the light of the decisions they had made earlier. The evaluation formed the basis for problem solving discussion session number two.

The operation of the pulp mill was presented in simple terms as a conflict between economics and ecological balance. Data on the number of workers, families, and the economy of Hinton were given, along with information regarding the use of lumber in industry and for home construction. Details of the pollution of the air and the river were reviewed, as well as the deforestation of surrounding countryside. The group was asked, "If you had to make the decision to close down the mill or not, what would you decide?" This question served to introduce problem solving discussion session number three.

Prior to the nature-observation walk, subjects were told that they were to accompany a counsellor, who would indicate to them some natural features of the ecology of the area. This information formed the basis for problem solving discussion session number four. Upon

returning to the camp, they were asked a series of questions relating to this information. The questions followed a particular pattern. Initially, they consisted of questions of identification of samples exhibited by the counsellor. These were followed by questions seeking explanations for observations made (e.g. "Why is this stone smooth and round?", "Why are trees in the valleys taller than trees on the ridges?"). These were followed by questions requiring inference, (e.g. "How are the squirrel and the spruce tree interdependent?").

The construction of the nature observation blind was preceded by an inspection of a beaver dam. The habits of the beaver and signs of activity were pointed out by a counsellor. The group was then asked to make decisions about where and how to construct the blind so that observations of beaver could be made undetected. These decisions formed the basis for problem solving discussion session number five. Following the construction of the blind, the group was asked to evaluate the blind and its effectiveness, and to evaluate how well the group had worked together as a team on the project. The evaluations formed the basis for problem solving discussion session number six.

APPENDIX B

Descriptive Data on Subjects : Age, Pre-Test and Post-Test Information

Appendix B

TABLE VI

Descriptive Data on Subjects : Age, Pre-Test and Post-Test Information

Variable	Age	Pre-Test Information						Post-Test Information						
		WISC	V	[illegible]	BB1	BB2	BB3	BB3	BB4	PPI	[illegible]	AB1	AB2	SM
S1 Gp. 1	15.6	113	19.5	84	30	9	80	5	18	266	74	28	8	8.3
S2 Gp. 1	14.7	107	20.0	86	17	13	86	6	33	361	60	28	9	8.7
S3 Gp. 1	13.5	112	19.5	74	34	22	74	12	33	221	88	64	15	7.4
S4 Gp. 1	14.1	87	18.2	58	7	0	78	0	4	201	42	17	6	8.3
S5 Gp. 1	14.0	104	20.0	84	0	22	62	11	0	148	80	46	12	8.9
S6 Gp. 1	13.5	107	18.8	52	6	17	92	7	6	280	74	51	13	9.6
S7 Gp. 1	13.4	100	16.8	72	6	4	78	2	2	334	66	48	12	6.4
S8 Gp. 1	12.9	106	18.3	82	22	8	48	2	15	176	74	43	12	8.0
Group Mean	13.9	104.5	18.8	71.5	17.7	11.8	74.7	5.6	13.8	248.3	69.7	40.6	10.8	8.2
Group SD	.8	8.1	1.0	12.5	12.6	8.0	13.8	4.3	13.3	75.2	13.9	15.2	2.9	.9
S1 Gp. 2	14.5	77	16.8	76	60	17	66	7	47	265	58	15	5	7.7
S2 Gp. 2	14.0	73	16.5	72	40	17	78	7	33	220	70	43	12	6.4
S3 Gp. 2	13.5	73	18.3	64	60	22	66	10	37	241	30	10	5	7.1
S4 Gp. 2	14.0	67	19.2	52	22	13	66	4	10	104	66	31	9	7.3
S5 Gp. 2	14.8	79	14.4	42	60	0	64	0	40	103	54	34	9	6.5
S6 Gp. 2	13.8	75	18.5	78	80	30	68	19	63	199	78	66	15	7.8
S7 Gp. 2	14.3	72	17.8	60	50	13	64	5	28	112	58	47	11	8.3
S8 Gp. 2	14.3	83	17.3	74	60	22	30	9	53	246	72	28	9	8.7
Group Mean	14.1	74.8	17.3	64.7	54.0	16.7	62.7	7.6	38.8	186.2	60.7	34.2	9.3	7.4
Group SD	.4	6.8	1.4	12.7	17.1	8.7	13.9	5.5	16.2	68.9	14.8	17.9	3.1	.9
S1 Gp. 3	13.8	110	20.8	66	6	13	80	5	3	165	56	34	11	7.3
S2 Gp. 3	14.3	100	20.0	72	38	4	78	1	30	167	52	20	7	8.1
S3 Gp. 3	13.6	70	15.0	82	20	13	78	7	20	278	76	49	12	6.6
S4 Gp. 3	14.3	71	18.0	38	60	17	86	8	47	165	54	11	6	7.3
S5 Gp. 3	14.3	107	19.3	76	0	0	74	0	0	174	52	31	9	7.8
S6 Gp. 3	13.7	84	19.7	66	57	17	82	8	48	240	66	50	12	7.3
S7 Gp. 3	14.1	62	15.5	80	33	13	60	6	33	240	52	43	9	7.6
S8 Gp. 3	14.9	126	19.5	88	30	4	76	3	18	133	74	60	14	8.9
Group Mean	14.1	91.2	18.4	73.5	30.5	10.1	76.7	4.7	24.8	192.7	60.2	37.8	10.0	7.7
Group SD	.4	22.8	2.1	9.8	21.6	6.5	7.7	3.1	18.0	52.6	10.2	16.3	2.7	.6
All-Group Mean	14.07	90.20	18.23	69.91	34.08	12.91	71.41	6.00	25.87	209.12	63.58	37.58	10.08	7.7
All-Group SD	.57	18.42	1.69	11.91	23.71	8.03	13.27	4.41	18.50	69.45	13.35	16.03	2.96	.8

Appendix B

Key for Table 1

Age	Chronological age
W.I.S.C.	Wechsler Intelligence Scale for Children
V	Vineland Scale of Social Maturity: Social Age
BR1	Coopersmith Behaviour Rating Scale - teacher ratings in home rooms
SS1	Sociometric status obtained in home rooms - weighted scores
SS2	Sociometric status obtained in home rooms -Unweighted scores
SE	Coopersmith Self-Esteem Inventory
SS3	Sociometric status obtained at camp -weighted scores
SS4	Sociometric status obtained at camp - unweighted scores
PP	Psychomotor performance
BR2	Coopersmith Behaviour Rating Scale - counsellor ratings at camp
AB1	Adaptation to the camp environment-ranked scores
AB2	Adaptation to the camp environment-scaled score
SM	Syntactic maturity

APPENDIX C

Preliminary Probe Quiz to Test for Knowledge of the L.Y. Cairns School

Appendix C

Preliminary Probe Quiz to Test for Knowledge of the L. Y. Cairns School

I am going to give you a short quiz to find out how well you know Edmonton. For example, I might ask you where the Strand theatre is in Edmonton. You could answer--the theatre is Downtown, or you might say Downtown on Jasper or on Jasper Avenue. Each of these answers would tell me that you know where it is. If I asked you where Storyland Valley Zoo is, or what it is, you could answer by saying it is in the West-end or that it is a place where animals are kept on display. Remember you must try to tell me where the place is or what people do at that place. Now here is your first question.

1. Where is City Hall?
2. " " Mayfair Park?
3. " " the Planetarium?
4. " " the Game Farm?
5. " " Clarke Stadium?
6. " " the CN railway station?
7. " " Jasper Place Composite High School?
8. " " RCMP Headquarters?
9. " " Refinery Row?
10. " " Victoria Park Golf Course?
11. " " W. P. Wagner School?
12. " " the Provincial Legislative Building?

Appendix C

13. " " the Journal office?

14. " are the Exhibition Grounds?

15. " is the Coronation Swimming Pool?

16. Where is the Chateau Lacombe?

17. " " L. Y. Cairns School?

18. " " the CP railway station?

19. " " the War Veterans' Memorial?

20. " " the Royal Alexandra Hospital?

APPENDIX D

Parents Permission Form

Appendix D

PARENTS PERMISSION FORM

Outdoor Education Centre Camp Project

I, _____ hereby give permission for my son _____ to participate in this project. I understand that every care and precaution will be taken to ensure the safety and health of the boy but I will not hold those individuals or organizations participating in the project in any way responsible.

_____(Signed)
(Parent/Guardian)

I also agree to make the following arrangements for his return home after being dropped off by the bus on Friday evening, the 12th of May.

_____.

_____

_____

_____

_____

_____

_____(Signed)

Appendix D

Educational Psychology Department

UNIVERSITY OF ALBERTA

Dear Parent:

Enclosed with this letter you will find a list of articles that should be taken to camp. Every effort will be made to ensure that belongings are not lost but please ensure that all belongings are labelled with the boy's name to assist us in this matter.

Attached is the schedule of pick-up points. Please have your boy at the designated place by 7:30 a.m. If you are unable to get him to this point, please phone me immediately at 432-5840.

All the vehicles will then proceed to Esso Service Station on the outskirts of the city on Highway 16. The vehicles will then proceed together to Hinton where we plan to arrive well before lunch.

For the return journey (Friday, 12th) boys will be dropped off at the spot they were picked up. We plan to arrive back in Edmonton at approximately 6:00 p.m. Please make arrangements for his return home from this point and indicate just what these arrangements are in the space provided on the "Parents Permission Form".

Yours sincerely,

M. J. Hughes.

APPENDIX E

Validity of the Bales IPA

Appendix E

Validity of the Bales IPA

The question of the validity of the Bales IPA is concerned primarily with the construct validity of the twelve categories used for the recording of interaction. Bales (1950), does not specifically refer to validation of his scheme but his explanations of the development of the scheme may be interpreted as evidence of efforts to establish construct validity. In referring to the origins of the scheme Bales (1950) states:

> A beginning was made on a strictly empirical ad hoc level, by attempting to find out whether or not categories could be invented on the spur of the moment to characterize the remarks being made. Almost immediately of course, repetitions began to occur, and so a preliminary list of categories was built up. The list was ordered according to theoretical preconceptions and was then tried again empirically. (This weaving back and forth between theoretical formulation and empirical trial is the procedure which has been employed throughout) (p. vi).

In establishing his own theoretical framework, Bales (1950), notes that he studied twenty-six other schemes which, at the time, represented the major schemes in the field of interaction analysis. In addition the scheme has undergone numerous revisions. Bales (1950), describes the derivation of the present format in the following manner:

> The present formulation is the result then of a series of some eleven or twelve major revisions and a considerable amount of exploratory experience. The number of categories separately distinguished has varied from five to eighty-seven. The set of categories as it now stands is a kind of practical compromise between the demands of theoretical adequacy, the curbs introduced by the number and kinds of distinction moderately trained observers can make in actual scoring situations, and the demand for a reasonable

> simplicity in the processing of data and the interpretation of results...(pp. vii-viii).

Although the present scheme is the result of theoretical formulations and empirical trials, its development is based on certain assumptions regarding the nature of small group interaction. Bales (1950), expresses the importance of these assumptions as follows:

> ... there is little reason to doubt that human interaction on a face-to-face level has at least certain similarities where ever we find it. Probably it will be recognized also that some more or less identical problems of first-hand skills and ethics in human relations are involved for the participants in all. The scientific relevance of the present procedure is based on these minimum assumptions (p. i).

The theoretical formulations,the revisions as a result of empirical data, together with the basic assumptions regarding the nature of interaction, form the basis of the construct validity of the Bales IPA.

APPENDIX F

All-Session Interaction Analysis Data

Table 2

All-Session Interaction Analysis Data: Group 1

NUMBER OF ACTS INITIATED AND RECEIVED BY EACH PERSON

PERSON	CATEGORY * 1		2		3		4		5		6		7		8		9		10		11		12	
	I	R	I	R	I	R	I	R	I	R	I	R	I	R	I	R	I	R	I	R	I	R	I	R
1	43	46	4	1	35	29	74	38	9	5	42	23	16	10	3	2	0	0	14	4	145	145	65	23
2	40	45	3	3	11	18	23	9	5	0	20	5	3	2	0	2	0	1	7	5	97	97	24	10
3	36	38	2	3	22	33	61	24	11	4	42	6	8	16	8	0	2	0	6	5	180	180	41	17
4	13	17	0	0	6	5	5	1	1	0	5	2	1	6	0	1	0	2	2	0	89	89	8	3
5	20	20	0	0	8	16	30	25	12	6	14	3	0	5	0	2	0	0	4	4	94	94	16	23
6	12	15	0	0	3	1	2	1	0	0	7	3	0	2	0	2	0	0	0	0	45	45	4	1
7	2	4	0	0	1	3	4	10	1	6	6	3	2	1	0	2	0	0	1	3	24	24	1	5
8	10	12	1	0	16	7	19	8	6	5	42	3	3	4	2	1	0	0	2	6	81	81	17	12

NUMBER OF ACTS INITIATED AND RECEIVED BY EACH PERSON

PERSON	SECTION A		B		C		D		TOTAL	
	I	R	I	R	I	R	I	R	I	R
1	82	76	125	66	19	12	224	172	450	326
2	54	66	48	14	3	5	128	112	233	197
3	60	74	114	34	18	16	227	202	419	326
4	19	22	11	3	1	9	99	92	130	126
5	28	36	56	34	0	7	114	121	198	198
6	15	16	9	4	0	4	49	46	73	70
7	3	7	11	19	2	3	26	32	42	61
8	27	19	67	16	5	5	100	99	199	139

* Refer to page 40 for a summary of Bales IPA categories

Table 3

All-Session Interaction Analysis Data: Group 2

NUMBER OF ACTS INITIATED AND RECEIVED BY EACH PERSON

PERSON	CATEGORY * 1		2		3		4		5		6		7		8		9		10		11		12	
	I	R	I	R	I	R	I	R	I	R	I	R	I	R	I	R	I	R	I	R	I	R	I	R
1	34	33	2	0	9	14	21	2	6	2	20	1	1	6	0	1	0	1	0	1	91	91	20	9
2	73	82	4	0	22	27	57	14	10	5	40	11	8	7	1	0	0	1	6	3	114	116	48	14
3	41	42	0	5	3	1	2	3	2	0	5	0	3	2	0	1	0	0	0	0	69	68	23	5
4	64	52	2	2	15	15	40	17	12	2	18	4	5	7	0	2	0	0	4	2	123	125	50	24
5	73	56	21	4	18	19	45	13	17	1	25	8	5	18	3	2	0	1	6	11	103	103	76	74
6	40	40	7	2	18	13	62	13	8	14	57	5	8	20	6	2	0	2	7	7	70	70	31	33
7	19	34	2	7	5	3	14	7	3	3	15	5	4	5	0	2	0	0	3	1	122	121	18	15
8	13	18	2	4	9	11	21	9	10	3	20	4	3	5	1	2	0	2	3	3	88	87	24	8

NUMBER OF ACTS INITIATED AND RECEIVED BY EACH PERSON

PERSON	SECTION A		B		C		D		TOTAL	
	I	R	I	R	I	R	I	R	I	R
1	45	47	47	5	1	8	111	101	204	161
2	99	109	107	30	9	8	168	133	383	280
3	44	48	9	3	3	3	92	73	148	127
4	81	69	70	23	5	9	177	153	333	254
5	112	78	87	22	8	21	185	188	392	310
6	65	55	127	32	14	24	108	110	314	221
7	26	44	32	15	4	7	143	137	205	203
8	24	33	51	16	4	9	115	98	194	156

* Refer to page 40 for a summary of Bales IPA categories

Table 4

All-Session Interaction Analysis Data: Group 3

NUMBER OF ACTS INITIATED AND RECEIVED BY EACH PERSON

PERSON	CATEGORY * 1		2		3		4		5		6		7		8		9		10		11		12	
	I	R	I	R	I	R	I	R	I	R	I	R	I	R	I	R	I	R	I	R	I	R	I	R
1	10	13	0	1	1	7	13	6	2	0	8	1	0	2	0	0	0	0	4	0	30	30	9	6
2	23	12	3	6	12	5	10	9	8	2	9	2	2	2	1	0	0	1	3	2	80	80	20	12
3	53	56	23	5	32	32	57	23	10	18	29	19	20	15	4	0	7	2	15	20	96	96	98	56
4	43	50	11	4	16	27	24	15	13	7	12	8	15	9	1	2	0	3	6	5	70	69	62	67
5	17	24	0	0	6	7	6	1	6	1	5	2	0	1	0	1	0	0	1	4	39	39	14	20
6	55	56	22	11	60	37	67	22	15	6	40	25	22	10	6	1	1	0	18	8	98	98	105	48
7	17	5	0	0	10	2	0	0	0	0	2	0	0	0	0	0	0	0	0	1	49	49	8	2
8	17	27	23	11	33	57	69	36	52	14	57	11	8	13	0	2	0	2	10	13	56	55	51	92

NUMBER OF ACTS INITIATED AND RECEIVED BY EACH PERSON

PERSON	SECTION A		B		C		D		TOTAL	
	I	R	I	R	I	R	I	R	I	R
1	11	21	23	7	0	2	43	34	77	64
2	38	23	27	4	3	3	103	94	171	124
3	108	93	96	60	31	17	205	172	440	342
4	70	81	49	30	16	14	138	141	273	266
5	23	31	17	4	0	2	54	63	94	100
6	137	104	122	53	29	11	221	158	509	322
7	27	7	2	0	0	0	57	52	86	59
8	73	95	178	61	8	17	117	160	376	333

* Refer to page 40 for a summary of Bales IPA categories

APPENDIX G

Bales' Hypotheses

Appendix G

Bales' Hypotheses

Theoretical formulations based on Bales' theory of group behaviour were expressed by Bales (1950) as a series of hypotheses. The indices of interaction are derived from these hypotheses.

Hypothesis I is concerned with communication and is stated as follows:

> Unless the members of a group are able to establish adequate, continuing perception of the situation and communication with each other, they are unable to co-operate, and hence are subjected to insecurity (i.e. to the various threats of isolation, confusion, conflict, frustration, deprivation) and will react to remove this insecurity by adaptive-instrumental activity. Insofar as this is successful, the solution will tend to be institutionalized. Insofar as these attempts are incomplete, inadequate or unsuccessful, the persisting insecurity will result in expressive-malintegrative behaviour (p. 138).

Hypothesis II is concerned with problems of evaluation and states:

> Unless the members of a group are able to establish adequate, continuing evaluation and inferences as to what they consider valuable, desirable, right, proper, moral, beneficial, and likely about the situation and to each other as persons and as solidary sub-groups, they are unable to cooperate and hence are subjected to insecurity (i.e. to the various threats of isolation, confusion, frustration, deprivation) and will react to remove this insecurity by adaptive-instrumental activity. Insofar as this is successful, the solution will tend to be institutionalized. Insofar as these attempts are incomplete, inadequate or unsuccessful, the persisting insecurity will result in expressive-malintegrative behaviour (p. 142).

Appendix G

Hypothesis III is concerned with problems relating to the difficulty of control over situation and states:

> Unless the individuals in a group are able to apply their efforts and skills to a degree and in a way which is actually effective in producing changes in the situation, and to feel the degree that their efforts are not so efficient as they would like, or feel that they should be, they will be subjected to frustration or deprivation in varying degrees and will react to remove this insecurity by adaptive-instrumental activity. Insofar as this is successful, the solution will tend to be institutionalized. Insofar as these attempts are incomplete, inadequate or unsuccessful, the persisting insecurity will result in expressive-malintegrative behaviour (p. 143).

Hypothesis IV is concerned with directiveness of control and states:

> Unless individuals in a group are able to exercise control over their cooperative efforts in an integrated way in the one hand, and in the other, unless they are able to maintain a delicate limitation as to the degree and circumstances under which particular members or sub-groups exert their potential power over each other through suggestion, persuasion, relative prestige, fraud, coercion or physical force, they will be unable to cooperate successfully or to satisfy their own needs individually and hence are subjected to insecurity (to the various threats of conflict, frustration, deprivation) and will react to remove this insecurity by adaptive-instrumental activity. Insofar as this is successful, the solution will tend to be institutionalized. Insofar as these attempts are incomplete, inadequate, or unsuccessful, the persisting insecurity will result in expressive-malintegrative behaviour (p. 145).

APPENDIX H

Behaviour Rating Scale (Coopersmith, 1967)

Appendix H

Behaviour Rating Scale (Coopersmith, 1967)

1. Does this child adapt easily to new situations, feel comfortable in new settings, enter easily into new activities?

   _____always _____usually _____sometimes _____seldom _____never

2. Does this child hesitate to express his opinions, as evidenced by extreme caution, failure to contribute, or a subdued manner in speaking situations?

   _____always _____usually _____sometimes _____seldom _____never

3. Does this child become upset by failures or other strong stresses as evidenced by such behaviors as pouting, whining, or withdrawing?

   _____always _____usually _____sometimes _____seldom _____never

4. How often is this child chosen for activities by his classmates? Is his companionship sought for and valued?

   _____always _____usually _____sometimes _____seldom _____never

5. Does this child become alarmed or frightened easily? Does he become very restless or jittery when procedures are changed, exams are scheduled or strange individuals are in the room?

   _____always _____usually _____sometimes _____seldom _____never

6. Does this child seek much support and reassurance from his peers or the teacher, as evidenced by seeking their nearness or frequent inquiries as to whether he is doing well?

   _____always _____usually _____sometimes _____seldom _____never

7. When this child is scolded or criticized, does he become either very aggressive or very sullen and withdrawn?

   _____always _____usually _____sometimes _____seldom _____never

8. Does this child deprecate his school work, grades, activities, and work products? Does he indicate he is not doing as well as expected?

   _____always _____usually _____sometimes _____seldom _____never

9. Does this child show confidence and assurance in his actions toward his teachers and classmates?

   _____always _____usually _____sometimes _____seldom _____never

10. To what extent does this child show a sense of self-esteem, self-respect, and appreciation of his own worthiness?

    _____very strong _____strong _____medium _____mild _____weak

11. Does this child publicly brag or boast about his exploits?

    _____always _____usually _____sometimes _____seldom _____never

12. Does this child attempt to dominate or bully other children?

    _____always _____usually _____sometimes _____seldom _____never

13. Does this child continually seek attention, as evidenced by such behaviors as speaking out of turn and making unnecessary noises?

    _____always _____usually _____sometimes _____seldom _____never

APPENDIX I

Self-Esteem Inventory (Coopersmith, 1967)

Self-Esteem Inventory (Coopersmith, 1967)

SELF-ESTEEM INVENTORY (SEI)

Please mark each statement in the following way:

If the statement describes how you usually feel, put a check (√) in the column, *"Like Me."*

If the statement does not describe how you usually feel, put a check (√) in the column *"Unlike Me."*

There are no right or wrong answers.

	Like Me	*Unlike Me*
1. I spend a lot of time daydreaming.		
2. I'm pretty sure of myself.		
3. I often wish I were someone else.		
4. I'm easy to like.		
5. My parents and I have a lot of fun together.		
6. I never worry about anything.		
7. I find it very hard to talk in front of the class.		
8. I wish I were younger.		
9. There are lots of things about myself I'd change if I could.		
10. I can make up my mind without too much trouble.		
11. I'm a lot of fun to be with.		
12. I get upset easily at home.		
13. I always do the right thing.		
14. I'm proud of my school work.		
15. Someone always has to tell me what to do.		
16. It takes me a long time to get used to anything new.		
17. I'm often sorry for the things I do.		
18. I'm popular with kids my own age.		
19. My parents usually consider my feelings.		
20. I'm never unhappy.		
21. I'm doing the best work that I can.		
22. I give in very easily.		
23. I can usually take care of myself.		
24. I'm pretty happy.		
25. I would rather play with children younger than me.		
26. My parents expect too much of me.		
27. I like everyone I know.		
28. I like to be called on in class.		
29. I understand myself.		
30. It's pretty tough to be me.		
31. Things are all mixed up in my life.		
32. Kids usually follow my ideas.		
33. No one pays much attention to me at home.		
34. I never get scolded.		
35. I'm not doing as well in school as I'd like to.		
36. I can make up my mind and stick to it.		
37. I really don't like being a boy—girl.		
38. I have a low opinion of myself.		
39. I don't like to be with other people.		
40. There are many times when I'd like to leave home.		
41. I'm never shy.		
42. I often feel upset in school.		
43. I often feel ashamed of myself.		
44. I'm not as nice looking as most people.		
45. If I have something to say, I usually say it.		
46. Kids pick on me very often.		
47. My parents understand me.		
48. I always tell the truth.		
49. My teacher makes me feel I'm not good enough.		
50. I don't care what happens to me.		
51. I'm a failure.		
52. I get upset easily when I'm scolded.		
53. Most people are better liked than I am.		
54. I usually feel as if my parents are pushing me.		
55. I always know what to say to people.		
56. I often get discouraged in school.		
57. Things usually don't bother me.		
58. I can't be depended on.		

APPENDIX J

Order of Presentation of Problem Solving Discussion Sessions

Appendix J

Order of Presentation of Problem Solving Discussion Sessions

Problem Solving Discussion Session	Group 1	Group 2	Group 3
	Session Numbers		
1. Plan a day long hike	3	1	5
2. Evaluate the day long hike	4	2	6
3. Discuss the merits of closing down the pulp mill	5	3	1
4. Identify objects of, and report on, the local ecology	6	4	2
5. Plan the construction of a nature observation blind	1	5	3
6. Evaluate the construction of a nature observation blind	2	6	4

APPENDIX K

Follow-Up Interview Format

Appendix K

Follow-Up Interview Format

The interview was conducted in an informal manner. The boys were asked to start from the beginning of the trip and relate all they could remember about the camp. When they indicated they were finished, any necessary additional questions were asked, but again every effort was made to encourage the boys to talk spontaneously about their experiences. The following were the general areas investigated.

1. Enjoyment of the camp experiences.
2. Most memorable experience.
3. Reaction to each task.
4. Reaction to discussion sessions.
5. Reaction to recording equipment.
6. Relationship with group leader and counsellors.
7. Relationship in own group.
8. Attitude towards other boys at the camp.
9. What memories they have of other boys.
10. Attitude to having to make decisions for themselves.
11. Attitude towards their own group and group tasks, cabin chores etc.
12. Attitudes or values held by other group members.
13. Personal reactions - loneliness, anxiety etc.
14. Negative experiences - bullying, teasing etc.
15. Funniest or best thing that happened at the camp.

APPENDIX L

Social Psychological Directions for All Subjects and Summary of Bales' Three Role Types

Social Psychological Directions for All Subjects

PERSON	SESSION 1	2	3	4	5	6	ALL	
1	2U 2N 1F	1U 1P 0F	2U 0P 0F	3U 3N 1B	0U 2N 1F	3U 1P 3F	3U 1N 1F	
2	3U 2N 0F	2U 1P 1F	3U 0P 2F	4U 2N 3F	3U 2N 1F	3U 2N 4F	3U 2N 5F	
3	1U 1N 1F	1U 2N 1F	1U 0P 0F	3U 2N 1F	1U 1N 2F	1U 0P 2F	1U 1N 3F	
4	1U 0P 1F	0U 1P 0F	2U 2N 2F	2U 0P 0F	4U 3N 3F	1U 1N 0F	4U 4N 3F	Group 1
5	3U 1N 4F	1U 2N 2F	3U 3N 3F	2U 0P 1F	1U 1N 0F	1D 0P 0F	2U 3N 3F	
6	2U 0P 1F	1U 1P 0F	1U 0P 2F	2U 0P 1B	2U 2N 0F	1D 0P 0F	2U 2N 1F	
7	4U 1N 5F	4U 2N 4F	3U 0P 5F	0U 0P 2F	2U 0P 0F	2U 0P 2F	5U 2N 6F	
8	3U 0P 3F	2U 0P 4F	2U 1P 4F	0U 1N 1F	4U 0P 1F	4U 1P 0F	2U 0P 2F	
1	1U 0P 3F	3U 0P 1F	6U 4N 3F	2U 2N 0F	1U 1P 2F	1D 0P 0F	6U 4N 3F	
2	2U 2P 3F	5U 0P 1F	2U 0P 1F	2U 1N 1F	2U 0P 3F	2U 1N 3F	3U 0P 2F	
3	3U 1P 2F	1U 1N 0F	2U 0P 0F	3U 2N 0F	1U 1N 0F	1U 1P 0F	2U 1N 2F	
4	2U 3P 0F	2U 1N 1F	1U 1N 2F	2U 1P 2F	2U 1N 2F	3U 1N 3F	3U 1N 3F	
5	3U 1P 2F	5U 0P 3F	5U 1N 3F	3U 2N 2F	3U 3N 2F	2U 2P 0F	5U 1N 2F	Group 2
6	2U 0P 1F	5U 1N 3F	4U 2N 2F	2U 2N 0F	1U 0P 3F	4U 3N 1F	4U 0P 1F	
7	2U 0P 2F	5U 2P 1F	4U 1P 1F	1U 1N 0F	1U 1P 0F	3U 2N 1F	3U 1N 1F	
8	2U 0P 2F	1U 1N 1F	3U 0P 2F	3U 3N 2F	3U 2N 2F	3U 3N 2F	2U 1N 3F	
1	3U 0P 1B	1U 1N 3F	3U 0P 0F	1D 0P 1F	1U 2N 2F	3U 1N 2F	3U 3N 1F	
2	1U 1N 1F	3U 0P 3F	2U 2P 2F	2U 2N 0F	2U 0P 1F	3U 1P 2F	3U 2P 4F	
3	4U 1N 4F	2U 2P 2F	4U 3P 0F	1D 1N 2F	1U 1N 1F	3U 0P 0F	2U 0P 2F	
4	2U 2N 1F	3U 2N 0F	2U 0P 1F	0U 1N 3F	4U 2P 0F	6U 1P 4F	4U 1P 3F	
5	3U 2N 3F	2U 1N 3F	1U 1N 1F	1U 1N 1F	0U 1N 1B	2U 1N 3F	4U 2N 3F	Group 3
6	1U 0P 1F	3U 2N 2F	2U 1P 0F	2U 0P 1F	2U 1P 3F	3U 1N 1F	2U 1P 3F	
7	0U 1N 0F	0U 0P 0F	2U 1P 1F	1U 2N 2F	1U 2P 1F	1U 1P 0F	2U 0P 2F	
8	5U 2N 4F	1U 1N 3F	2U 0P 2F	3U 1N 3F	2U 0P 1F	3U 2N 3F	6U 2N 4F	

Appendix L

Summary of Bales' Three Role Types

Type UNF

The member located in the upward-negative-forward part of the group space by his fellow members seems dominating and unfriendly and takes the initiative in the value- or task-oriented direction. He assumes moral superiority over the others in the group and regards himself as the authority and the guardian of the moral and legal order. In the realization of his own values he seems to be trying to move toward autocratic authority. "In most groups it's better to choose somebody to take charge and run things and then hold him responsible, even if he does some things the members don't like." "Obedience and respect for authority are the most important virtues children should learn." (Bales, 1970, p. 220)

Type UF

The member located in the upward-forward part of the group space by his fellow members takes the initiative or leadership in giving suggestions to the group. He seems ascendant, value- and task-oriented, but at the same time strictly impersonal, or affectively neutral, neither consistently friendly nor unfriendly. In the realization of his own values he seems to be trying to move toward group loyalty and cooperation. "An individual finds himself in merging with a social group, joining with others in resolute and determined activity for the realization of social goals." "A group cannot get their job done without voluntary cooperation from everybody." (Bales, 1970, p. 213)

Type UPF

The member located in the upward-positive-forward part of the group space by his fellow members seems ascendant and friendly, but he also takes the initiative in leading the group as a whole in the task- or value-oriented direction. In the realization of his own values he seems to be trying to move toward social solidarity and progress at the same time. "A good group is democratic--the members should talk things over and decide unanimously what should be done." (Bales, 1970, p. 208)

APPENDIX M

Pearson's Product Moment Correlation for Twenty-Six Variables

Table 18

Pearson's Product Moment Correlation for Twenty-Six Variables

MEANS

	1	2	3	4	5	6	7	8	9	10
1	8.041667	3.250000	3.375000	4.875000	71.208328	16.083344	10.125000	0.541667	94.958344	192.500000
	11	12	13	14	15	16	17	18	19	20
1	15.750000	63.208344	78.958344	77.833328	69.916656	63.583328	71.416656	34.083328	12.916666	8.000000
	21	22	23	24	25	26				
1	25.875000	209.125000	182.375000	90.208344	37.583328	10.083333				

STANDARD DEVIATIONS (UNBIASED)

	1	2	3	4	5	6	7	8	9	10
1	4.903231	2.641640	2.856153	3.097158	12.272200	10.786150	8.548137	1.141287	24.165161	30.062256
	11	12	13	14	15	16	17	18	19	20
1	16.022400	46.706284	60.560806	8.421848	11.919731	13.357675	13.272779	23.711884	8.032092	4.413418
	21	22	23	24	25	26				
1	18.508072	69.450180	16.970078	18.429626	16.037766	2.962324				

CORRELATIONS

	1	2	3	4	5	6	7	8	9	10
1	1.000000	0.657080++	0.725318++	0.899351++	-0.394662	0.010620	0.491567++	0.399807	0.153398	0.138781
2	0.657080++	1.000000	0.839896++	0.886137++	-0.335622	0.362409	0.556930++	0.558825++	0.399975	0.506429++
3	0.725318++	0.839896++	1.000000	0.909897++	-0.565478++	0.190882	0.421831+	0.588546++	0.247804	0.186091
4	0.899351++	0.886137++	0.909897++	1.000000	-0.443116++	0.179934	0.537629++	0.573499++	0.285743	0.301428
5	-0.394662	-0.335622	-0.565475++	-0.443116++	1.000000	-0.269146	-0.042948	-0.517502++	-0.195985	0.121326
6	0.010620	0.362409	0.190882	0.179934	-0.269146	1.000000	0.352139	0.444728++	0.269243	0.598564++
7	0.491567++	0.556930++	0.421831++	0.537629++	-0.042948	0.352139	1.000000	0.277983	-0.129838	0.316473
8	0.399807	0.558825++	0.588546++	0.573499++	-0.517502++	0.444728++	0.277983	1.000000	0.188455	0.223667
9	0.153398	0.399975	0.247804	0.285743	-0.195985	0.269243	-0.129838	0.188455	1.000000	0.782265++
10	0.138781	0.506429++	0.186091	0.301428	0.121326	0.598564++	0.316473	0.223667	0.782265++	1.000000
11	0.691374++	0.829495++	0.772658++	0.854470++	-0.332947	0.293976	0.564344++	0.545079++	0.352238	0.440658++
12	0.633876++	0.785742++	0.879383++	0.824329++	-0.602809++	0.269579	0.356252++	0.751449++	0.321551	0.243343
13	0.671779++	0.825445++	0.882626++	0.861812++	-0.552991++	0.285684	0.424059++	0.723749++	0.341180	0.304310
14	-0.059839	0.037132	-0.078627	-0.035837	0.357500	-0.392315	-0.072170	-0.184707	0.009151	-0.013566
15	0.014941	0.316276	0.327897	0.204631	0.117230	0.207021	0.233948	0.329458	0.163008	0.336948
16	0.518067++	0.643804++	0.537616++	0.580907++	-0.038701	0.026809	0.178681	0.363390	0.258829	0.274689
17	0.033794	0.101064	0.221640	0.116607	-0.255469	0.076887	-0.177904	0.245643	0.098878	-0.047835
18	0.434509++	0.100994	0.264016	0.293794	-0.331457	0.235076	0.458555++	0.088230	-0.430071++	-0.245805
19	0.217576	0.111677	0.162516	0.155113	0.090165	-0.004936	0.250290	0.081025	-0.248214	-0.090392
20	0.393796	0.216298	0.272485	0.305355	0.000803	0.022833	0.299640	0.198532	-0.146761	-0.013436
21	0.347888	0.061138	0.260009	0.229537	-0.361665	0.257921	0.306156	0.116553	-0.356629	-0.216964
22	-0.197151	0.003614	-0.049345	-0.108873	0.252429	0.243931	0.088808	0.136242	-0.088286	0.159215
23	-0.024754	0.149118	0.128836	0.070418	0.231342	-0.302318	0.055111	-0.183800	0.143701	0.088336
24	0.069185	0.280202	0.180170	0.164246	0.149743	-0.292757	0.000106	-0.065544	0.282551	0.165232
25	0.402188	0.356623	0.420248	0.402426	-0.070892	-0.147680	-0.069694	0.345420	0.156564	0.035981
26	0.400859	0.363920	0.438079+	0.399250	-0.068668	-0.179763	-0.053657	0.320431	0.169505	0.037593

	11	12	13	14	15	16	17	18	19	20
1	0.691374++	0.633876++	0.671779++	-0.059839	0.014941	0.518067++	0.033794	0.434509++	0.217576	0.393796
2	0.829495++	0.785742++	0.825445++	0.037132	0.316276	0.643804++	0.101064	0.100994	0.111677	0.216298
3	0.772658++	0.879383++	0.882626++	-0.078627	0.327897	0.537616++	0.221640	0.264016	0.162516	0.272485
4	0.854470++	0.824329++	0.861812++	-0.035837	0.204631	0.580907++	0.116607	0.293794	0.155113	0.305355
5	-0.332947	-0.602809++	-0.552991++	0.357500	0.117230	-0.038701	-0.255469	-0.331457	0.090165	0.000803
6	0.293976	0.269579	0.285684	-0.392315	0.207021	0.026809	0.076887	0.235076	-0.004936	0.022833
7	0.564344++	0.356252	0.424059++	-0.072170	0.233948	0.178681	-0.177904	0.458555++	0.250290	0.299640
8	0.545079++	0.751449++	0.723749++	-0.184707	0.329458	0.363390	0.245643	0.088230	0.081025	0.198532
9	0.352238	0.321551	0.341180	0.009151	0.163008	0.258829	0.098878	-0.430071++	-0.248214	-0.146761
10	0.440658++	0.243343	0.304310	-0.013566	0.336948	0.274689	-0.047835	-0.245805	-0.090392	-0.013436
11	1.000000	0.821420++	0.898073++	0.103430	0.410579	0.529711++	0.018503	0.173548	0.033615	0.188759
12	0.821420++	1.000000	0.988551++	0.006724	0.391140	0.492849++	0.169710	0.186892	0.015462	0.147856
13	0.898073++	0.988551++	1.000000	0.032550	0.410284	0.520243++	0.151205	0.190052	0.020818	0.163971
14	0.103430	0.006724	0.032550	1.000000	0.173100	0.190280	-0.055362	-0.281440	0.078843	0.061996
15	0.410579	0.391140	0.410284	0.173100	1.000000	0.317627	-0.075071	-0.052584	0.056236	0.145460
16	0.529711++	0.492849++	0.520243++	0.190280	0.317627	1.000000	-0.068134	-0.035027	0.345737	0.402679
17	0.018503	0.169710	0.151205	-0.055362	-0.075071	-0.068134	1.000000	-0.285805	-0.184816	-0.097974
18	0.173548	0.186892	0.190052	-0.281440	-0.052584	-0.035027	-0.285805	1.000000	0.483774++	0.506863++
19	0.033615	0.015462	0.020818	0.078843	0.056236	0.345737	-0.184816	0.483774++	1.000000	0.952992++
20	0.188759	0.147856	0.163971	0.061996	0.145460	0.402679	-0.097974	0.506863++	0.952992++	1.000000
21	0.101202	0.167015	0.155582	-0.197347	0.086666	-0.016399	-0.251262	0.937827++	0.521987++	0.540219++
22	-0.101403	-0.162825	-0.150861	0.035597	0.455580	0.093043	0.230634	-0.130854	0.174687	0.196556
23	0.202159	0.170934	0.185314	0.516276++	0.133426	0.116952	0.285927	-0.272366	0.112200	0.106234
24	0.314839	0.276341	0.296418	0.499692++	0.337735	0.343000	0.251849	-0.487753++	-0.297706	-0.226648
25	0.339194	0.395396	0.392309	0.067384	0.226793	0.737098++	0.038433	-0.040835	0.224170	0.346443
26	0.321070	0.412783	0.403294	0.082489	0.211993	0.785440++	0.058792	-0.091711	0.246991	0.349184

	21	22	23	24	25	26
1	0.347888	-0.197151	-0.024754	0.069185	0.402188	0.400859
2	0.061138	0.003614	0.149118	0.280202	0.356623	0.363920
3	0.260009	-0.049345	0.128836	0.180170	0.420248	0.438079+
4	0.229537	-0.108873	0.070418	0.184246	0.402426	0.399250
5	-0.361665	0.252429	0.231342	0.149743	-0.070892	-0.068668
6	0.287921	0.243931	-0.302318	-0.292737	-0.147580	-0.175763
7	0.366156	0.088808	0.055111	0.000108	-0.069694	-0.053657
8	0.116553	0.136242	-0.183800	-0.065544	0.345420	0.320431
9	-0.358629	-0.088286	0.143701	0.282551	0.156564	0.169505
10	-0.216964	0.159215	0.088336	0.165232	0.035981	0.037593
11	0.101202	-0.101403	0.202159	0.314839	0.330194	0.321070
12	0.167015	-0.160825	0.170934	0.276341	0.395396	0.412783
13	0.155582	-0.150861	0.185314	0.296418	0.392300	0.403294
14	-0.197347	0.036907	0.514276+	0.499692+	0.067384	0.082489
15	0.086666	0.455580+	0.133426	0.337735	0.226793	0.211993
16	-0.016399	0.093043	0.116952	0.343000	0.737095++	0.785440++
17	-0.251282	0.230634	0.285927	0.251849	0.038433	0.058792
18	0.937827++	-0.130854	-0.272366	-0.487753+	-0.040835	-0.091711
19	0.521987+	0.174687	0.112200	-0.297706	0.224170	0.246991
20	0.540259++	0.180856	0.106234	-0.226645	0.346443	0.349184
21	1.000000	0.072263	-0.277948	-0.492832+	-0.06580[illegible]	-0.106065
22	0.072263	1.000000	-0.091641	0.107593	-0.011037	-0.011042
23	-0.277948	-0.091641	1.000000	0.638551++	0.032869	0.122164
24	-0.492832+	0.107593	0.622551	1.000000	0.254053	0.336538
25	-0.065804	-0.011037	0.032869	0.254053	1.000000	0.973575++
26	-0.106065	-0.011042	0.122164	0.336538	0.973575++	1.000000

++ $p < .01$ + $p < .05$

Appendix M

Key for Correlation Table

Item No.	Code	Variable
1	CR	Bales' index: Direct access to resources
2	BR	Bales' index: Indirect access to resources
3	ADR	Bales' index: Positive reactions
4	GS	Bales' index: Generalized status
5	MB	Bales' index: Maladaptive behaviour
6	DC	Bales' index: Difficulty of communication
7	DE	Bales' index: Difficulty of evaluation
8	DCS	Bales' index: Difficulty of control over situation
9	DiCo	Bales' index: Directiveness of control
10	O-A	Bales' index: Overall
11	PT1	Productive thinking 1: Originality
12	PT2	Productive thinking 2: Elaboration
13	PT3	Productive thinking 3: Fluency
14	SM	Syntactic maturity: Words per T-unit
15	BR1	Behaviour rating 1
16	BR2	Behaviour rating 2
17	SE	Self-esteem inventory: Self-esteem
18	SS1	Sociometric status 1
19	SS2	Sociometric status 2
20	SS3	Sociometric status 3
21	SS4	Sociometric status 4
22	PP	Psychomotor performance (actual score)
23	V	Vineland Social Maturity Scale
24	WISC	Wechsler Intelligence Scale for Children
25	AB1	Adaptation to the camp environment (Rank order)
26	AB2	Adaptation to the camp environment (Scaled)

APPENDIX N

ANOVA Summary Table

Table 19

ANOVA Summary Table

One-Way Analysis of Variance for Descriptive Data

Variable	MSw df = 2, 21	F	Significant differences between groups
Age	35	.20	
W.I.S.C.	204.21	8.63	2 - 1** 3 - 1** 3 - 2**
V	2.68	1.86	
BR_1	139.62	1.20	
SS_1	358.19	7.55	1 - 2** 1 - 3** 3 - 2**
SS_2	61.70	1.52	
SE	149.29	3.07	
SS_3	19.68	.88	
SS_4	255.55	4.92	1 - 2*
PP	4394.33	2.12	
BR_2	173.64	1.32	
AB_1	273.92	.30	
AB_2	193	.49	
SM	66.57	1.75	

* $p < .05$
** $p < .01$

Appendix N

Key for Table 19

Age	Chronological age
W.I.S.C.	Wechsler Intelligence Scale for Children
V	Vineland Scale of Social Maturity: Social Age
BRI	Coopersmith Behaviour Rating Scale - teacher ratings in home rooms
SS1	Sociometric status obtained in home rooms - weighted scores
SS2	Sociometric status obtained in home rooms -Unweighted scores
SE	Coopersmith Self-Esteem Inventory
SS3	Sociometric status obtained at camp - weighted scores
SS4	Sociometric status obtained at camp -unweighted scores
PP	Psychomotor performance
BR2	Coopersmith Behaviour Rating Scale - counsellor ratings at camp
AB1	Adaptation to the camp environment-ranked scores
AB2	Adaptation to the camp environment-scaled score
SM	Syntactic maturity